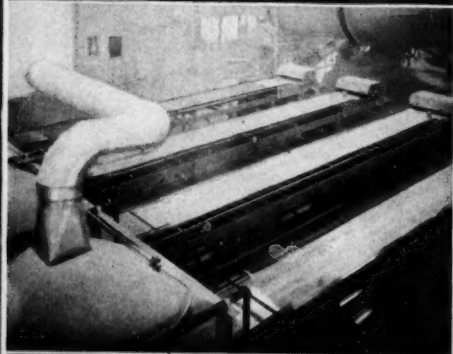


Chemical Week—



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handy around the house

Best friend of the handyman, the essential oil-
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Chemical Week

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OPINION

Burst Bubble

TO THE EDITOR: . . . I recall how severely critical a good many letters were of you when you came right out and said—a year or more ago—that chlorophyll was not a miraculous cure-all . . .

With so much enthusiasm bubbling for the "green miracle" then . . . it looked like an unwise thing for anyone to take that stand . . .

Ask anyone in the business today and you'll find that the bubble has burst . . .

Possibly it should have been more generally foreseen . . . but, because prophets are supposedly always without honor, I'd like to say that I'd like to borrow your crystal ball . . .

ROBERT L. MEALLS,
Milwaukee, Wis.

Unorthodox Views

TO THE EDITOR: I have followed with considerable interest your various news stories on the tariff question. . . .

I'm enclosing some pages from a recent issue of *Harvard Business Review* on which you'll find an article by Gardner Cowles. He expresses admirably my own unorthodox views—unorthodox, at least, so far as the chemical industry is concerned. I must ask you to withhold my name since my views certainly don't coincide with those of my company . . . and I don't suppose you'd care to risk your readers' wrath by printing what Mr. Cowles has to say . . .

NAME WITHHELD

Wrong you are, sir. It would be not only unprincipled but downright stupid to withhold news of current tariff thinking—whether we agree with it or not—that may vitally affect our readers' business. Since Gardner Cowles and his medium of expression, Harvard Business Review, are both influential, we agree that our readers—who may well disagree with Mr. Cowles and you—should be apprised of his opinions. Here are some excerpts:

"Every intelligent American now knows, I believe, that in a military sense there is no security for us in isolationism. . . . That is why we created the North Atlantic Pact . . .

"But we Americans are still curiously isolationist in our economic thinking about security. . . . Indeed, our economic policy contradicts and undermines our military strategy and our political goals.

" . . . Our trade policy operates to keep our allies poor and dependent on an American dole.

"For, as a nation, we still cling to the naive notion that we can permanently export much more than we import. We foolishly think that somehow we are better off giving the rest of the world billions of dollars of aid each year, taxing all Americans heavily to provide these billions . . .

" . . . Since 1946, freighters have carried away from America some \$34 billion worth of goods over and above what the freighters brought in. Also, since 1946, Congress has given away \$30 billion in foreign aid. It is no accident that those two figures are almost identical. We have had to give our allies the money with which to buy our goods. We have paid for our own exports.

" . . . Last year we exported \$15.2 billion of goods; we imported \$10.7 billion. This left a 'dollar gap' of 4½ billions. It is only this gap that I suggest we fill by a more liberal and intelligent import policy. The gap is small in our total economy, but huge in its impact on the economy of our allies.

"It seems to me self-evident that if we continue to keep the United States market substantially closed to Western Europe, we are going to force our allies sooner or later to increase their trade with the Soviet bloc. How else can they live?

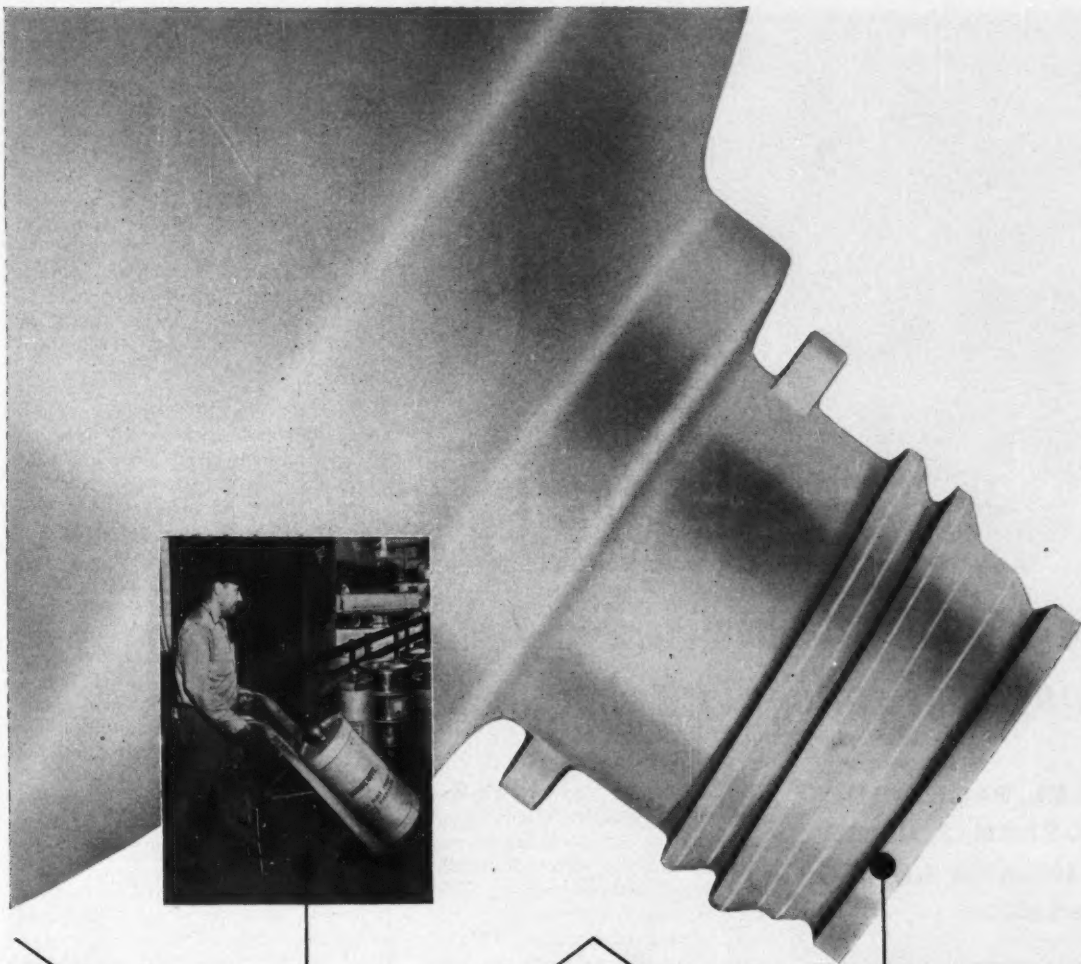
" . . . And won't Russia and China leap at the chance to pull Japan into their economic orbit? . . .

"Some people in the United States look on all imports with horror. They think that imports deprive American workmen of jobs. This argument is one of the oldest fallacies in economics and has been proved false over and over again. Actually, imports improve our standard of living in three ways: (1) They allow us to buy some things cheaper than we could produce them ourselves. (2) They leave the American consumer more money to spend on other things. (3) They enlarge our marketing possibilities by giving foreigners dollar earnings with which to buy American goods—goods that American business and labor must produce.

" . . . What do we lose in being able

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



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These shipments had received rough handling in transit: In "humping," one drum had apparently broken loose and forced others away from their shoring. Consecutive damage resulted as drum smashed drum. (One was dented as deep as

1/2 of the drum's diameter!) Yet for hundreds of miles of this banging and bumping, Inland's lining proved elastic enough to withstand punch after punch without breaking. The contents were *fully* protected!

According to Emulsol, "We're more than pleased with the job Inland linings do in protecting our emulsifiers."

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division of INLAND STEEL COMPANY

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OPINION

to buy something at a lower price? What do we lose in letting foreign countries produce some commodities cheaper than we can, so that we free more of our resources to use in producing those things that *we* can produce better and cheaper than *they* can?

"I am not advocating the sudden and abrupt adoption of total free trade. . . . Rather, I am urging a slow, but steady, reduction of all our trade barriers—for our own benefit. . . .

" . . . I think we should adopt a plan which would call for about a 5% cut in duties each year for 10 years, in return for equivalent reciprocal concessions by other countries. And we should surely simplify our customs procedures. . . .

"Likewise, I think we should progressively remove all import quotas. And we should immediately repeal the 'Buy-American Act.' . . .

" . . . Expanding world trade will permit us to sell more, to buy more, to buy more cheaply, to make sharp reductions in foreign aid, to cut our federal spending, and to reduce our staggering tax burden.

"Of course, some industries in the United States will meet increased competition if the tariff is progressively cut. . . .

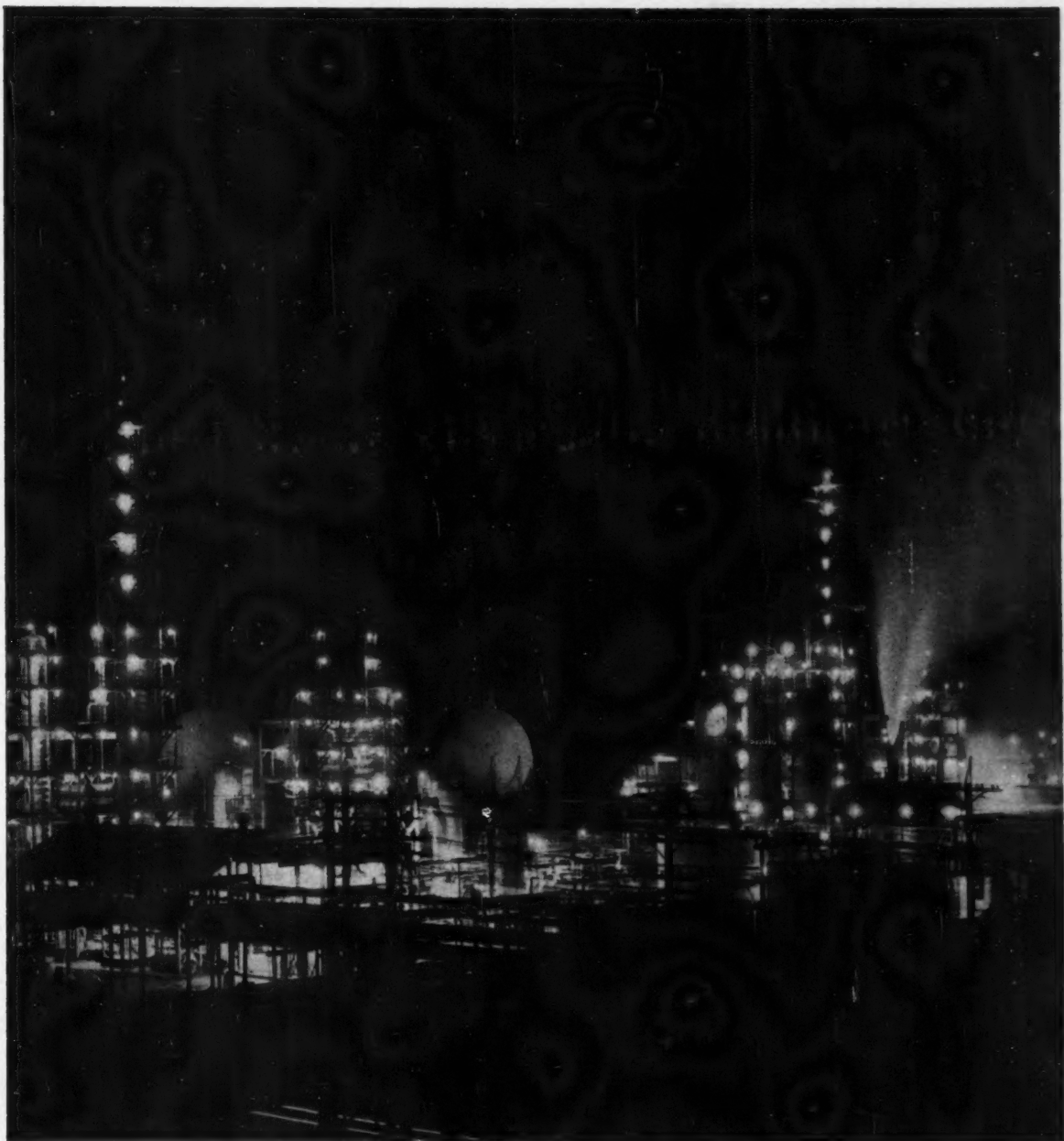
"To the few who would be injured, I would favor payment of damages from the federal Treasury to enable such industries and their workers to readjust . . . a 'Little Marshall Plan for Americans.'

"This . . . should be strictly temporary, operating only for three or four years. It could include a program of retraining and relocation of workers. . . . It could include federal loans or grants to factory owners, to enable them to shift production into other lines. In the *long run*, the business and labor artificially protected by a tariff would be better off producing in areas where they can compete without a subsidy from the government or the consumer.

"It is popular today to brand Russia as the *sole* enemy of freedom. . . . But our own skirts are not too clean when we begin to discuss *economic* freedom. . . . It seems to me that no nation can properly conserve even economic freedom to itself while denying it to others. . . ."—Ed.

What is IPA?

TO THE EDITOR: Now that Chemical Week (page 78, Sept. 18 issue) has officially sanctioned the use of IPA for the newcomer, iso-phthalic acid, what are we going to use for the old-



Standard Oil Co. (N. J.) Photo by Rotkin

Petroleum, the mammoth and Aladdinlike industry that supplies Americans with an ever-growing list of products, has invested more than \$19 billion in new equipment in the postwar years, has increased 1940 production by 63 per cent. Pennsalt Chemicals . . . hydrofluoric acid, ammonia, caustic soda, chlorine, and corrosion-resistant cements . . . play a major role in modern petroleum refining.

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OPINION

time big-league chemical, iso-propyl alcohol, which has for years been getting along fine as IPA?

FRANK D. KUENZLY, JR.
Ventura, Calif.

You have caught us with our journalistic brevity showing, Reader Kuenzly. Perhaps we should rechristen the two chemicals in accordance with academic usage, call them propan-2-ol and benzene-1,3-dicarboxylic acid—which of course we would shorten to P-2-O and B-1,3-DA.—Ed.

Conference on Selling

TO THE EDITOR: We have just received a copy of CW (Oct. 10) with the story about our Marketing Conference. We are very much pleased indeed to see your . . . most accurate and informative article.

E. A. HAMMESFAHR
National Industrial Conference Board
New York, N. Y.

DATES AHEAD

Natl. Paint, Varnish and Lacquer Assn., annual meeting, Chalfonte-Haddon Hall, Atlantic City, N.J., Oct. 26-28.

Assn. of Consulting Chemists and Chemical Engineers, annual meeting, Belmont Plaza hotel, New York, N.Y., Oct. 27.

Society of Rheology, annual meeting, New Yorker hotel, New York, N.Y., Oct. 29-31.

American Oil Chemists Society, fall meeting, Sherman hotel, Chicago, Ill., Nov. 2-4.

American Council of Commercial Laboratories, annual meeting, Sheraton-Cadillac hotel, Detroit, Mich., Nov. 4-7.

American Petroleum Inst., annual meeting, Conrad Hilton hotel and Palmer House, Chicago, Ill., Nov. 9-12.

Chemical Market Research Assn. and ACS Division of Chemical Marketing and Economics, joint meeting, Shoreham hotel, Washington, D.C., Nov. 18-19.

Chemical Institute of Canada, 5th Canadian high polymer forum, London Library and Museum, London, Ont., Nov. 19-20.

Manufacturing Chemists Assn., midyear meeting, Waldorf-Astoria hotel, New York, N.Y., Nov. 24.

Chemicals Industries Exposition, Commercial Museum and Convention Hall, Philadelphia, Pa., Nov. 30-Dec. 6.

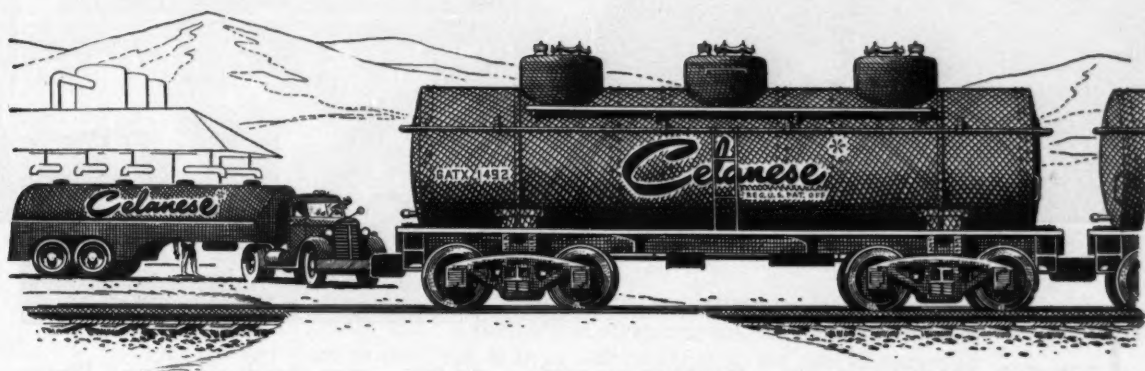
Chemical Specialties Manufacturers Assn., annual meeting, Mayflower hotel, Washington, D.C., Dec. 6-8.

American Institute of Chemical Engineers, annual meeting, Jefferson hotel, St. Louis, Mo., Dec. 13-16.

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NEWSLETTER

Two companies—Barrett Division of Allied, and Diamond Alkali—this week are joining the ranks of polyvinyl chloride makers.

Barrett, which added alkyd and polyester resins to its sales spectrum through its purchase of Plaskon (CW, Oct. 17), now reveals that it is also going to make and sell vinyl resins.

Diamond, which entered the vinyl field as a facet of its diversification into chlorinated organics, has just made its initial distribution to the trade of production samples from its Houston plant, has also made its first substantial shipment of resin. Diamond thinks that its plant represents one of the lowest per-capacity-unit investments in the industry; and raw-material costs are low, too—it has its own chlorine, and next-door neighbor Shell supplies the ethylene.

And a West Coast culmination this week was the initial test run of Monsanto's phenol plant at Avon, Calif. Barring unforeseen difficulties, the first tankcar should roll by the end of the month.

Standard Oil of California was originally scheduled to complete its phenol plant at nearby Richmond about the same time, but it won't be onstream much before the end of December.

Another Standard Oil—Ohio, this time—is looking hard at petrochemicals, may enter the field soon. Pres. C. T. Foster says Sohio has been studying the economics "with the expectation that developments . . . in the field of petrochemicals will present at some point an attractive opportunity for entry. . . . This point seems to be moving closer and our plans are becoming more tangible."

The antibiotics aren't new, but the mixture is. Introduced last week was a "multibiotic," a mixture of streptomycin, bacitracin and polymyxin approved by the Food & Drug Administration for over-the-counter sale.

For external use only, the new product is designed to prevent infection of skin wounds. Its maker, Multibiotics Corp. of America, foresees its use in bandages, soaps, lotions, toothpastes, etc. Not only is the mixture stable for two years, but the component antibiotics exert a synergistic effect upon one another, thus control more microorganisms—and a greater variety of them—than the three separate antibiotics.

Now in production and "working smoothly" is the first half-billion-dollar unit of the Atomic Energy Commission's U-235 plant at Paducah, Ky., operated for AEC by Carbide and Carbon. Construction of the unit was started in 1951, and the second, equally large unit is now being built.

Proceeding less smoothly is the plan (CW, Oct. 3) of BDSA's chemical and rubber division to issue a series of end-use patterns for about 55 chemicals.

The first report, on benzene, has long been ready; but top brass

of the Business and Defense Services Administration are sitting on it. They're not sure the new agency should get involved in such sensitive market research activities. Moreover, if the chemical group should undertake such an ambitious study, other industries might expect their appropriate BDSA groups to do likewise—and other divisions are not keen, or are unequipped, to take on that kind of a job.

•

How best to handle a \$50-million fiasco? That's the question, reports a Houston newspaper, confronting stockholders and creditors of Carthage Hydrocol, Inc., Brownsville, Tex., which suspended operations this summer (CW Newsletter, June 27) because of process trouble.

Now all stockholders but two—Forest Oil Corp. and Stone & Webster, which together own less than 15% of the outstanding stock—agree to a plan whereby private interests would take over the plant, pay off the \$17.5-million balance of the RFC loan, and invest enough additional capital to make the plant work. The two holdouts think they'd fare better by throwing the corporation into bankruptcy and writing off their investment as a 100% loss for tax purposes.

•

Pruning for better-oriented growth is an apt characterization of two moves made this week by Du Pont.

It's selling—as of next Monday—its aromatics and compound business to Rhodia, Inc., New York, an affiliate of France's Rhone-Poulenc. Rhodia will take over the manufacture and marketing of products for the soap, cosmetic, perfume and flavoring industries. Not included in the sale are Du Pont's Alamask industrial reodorants.

Du Pont will also part company with lithopone. It will stop making it before the end of the year, will stop selling the pigments at the end of February: Reason: greater emphasis on titanium dioxide.

•

Want a Wyoming plant? The state's Natural Resource Board is trying to sell one, the federal government another.

The state is seeking an occupant for an abandoned refinery at Greybull, formerly operated by Standard Oil of Indiana—26 buildings on 190 acres of land, railroad spur already installed.

The federal government has declared surplus its sponge iron plant at Laramie, will sell the 1.12 acres of land, buildings and equipment to the highest bidder. Originally built as a glass factory, the plant has a railroad spur, electric power, natural gas, water and sewage facilities.

•

Chicago's getting after pollution. Midwestern Air Pollution Prevention Assn. has retained Armour Research Foundation to make a \$25,000 study. The Foundation will first make a statistical survey of previous violations and from the data evaluate the factors responsible for pollution; then it will inform Chicagoans how it can be controlled.

Armour is also working up zoning standards for the City Plan Commission. The gist is that instead of zoning by particular industry, any industry could locate in any of three kinds of zones depending on how much air pollution, noise, fire hazard and traffic are involved.

•

Sensational news of fires and explosions distorts the facts. Actually, there were 12% fewer accidents in companies belonging to the Manufacturing Chemists' Assn. in the first eight months of 1953 than during last year's corresponding period.

... The Editors

Work Wanted ESTER NEEDS A JOB! Inquire at Ethyl

AMYL NITRATE is now available in commercial quantities and NORMAL PROPYL NITRATE in pilot-plant quantities. Four other alkyl nitrates are available in laboratory quantities.

What can these new esters do in your field? They are characterized by low freezing point, favorable odor and color properties, very low water solubility, and low toxicity. They have high solvent power and are miscible with most organic solvents. They are stable in storage and can be shipped as non-explosive material in conventional steel drums.

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Nitrates	Amyl	n-Propyl	Ethyl-Propyl	iso-ethyl	Butyl	Tributyl
Formula	C ₅ H ₁₁ NO ₂	C ₃ H ₇ NO ₂	60% C ₄ H ₉ NO ₂ 40% C ₃ H ₇ NO ₂	C ₄ H ₉ NO ₂	C ₄ H ₉ NO ₂	C ₄ H ₉ NO ₂
Density	0.898	1.057	1.085	0.963	0.943	0.931
Boiling Range, °C	152-157	104-116	88-111	41-43 @ 1 mm	55-75 @ 1 mm	78-89 @ 1 mm
Freezing Point, °C	<-100	<-100	<-100	<-100	<-55	<-55
Flash Point, °F (Open Cup)	125	85	85	205	235	285
Viscosity in Centistokes @ 100°F	0.81	0.51	0.45	1.41	2.07	3.75
Coefficient of expansion per °C @ 20°C	0.00112	0.00095	0.00119	0.00094	0.00090	0.00080
Ref. Index n _D ²⁰	1.413	1.367	1.390	1.431	1.438	1.446
Solubility in water (Parts/100) @ 20°C	0.028	0.33	0.567	<0.01	<0.01	<0.01
Impurities, wt. %						
Water	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acid as HNO ₃	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Odor	Ethanol (Pleasant)	Same	Same	Same	Same (faint)	Same (faint)
Color	White to light straw	Same	Same	Same	Same	Same
Availability	Commercial quantities	Pilot plant quantities	Laboratory quantities	Laboratory quantities	Laboratory quantities	Laboratory quantities

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IN CONTINENTAL LEVERPAK DRUMS

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story. Leverpak drums are capable of carrying up to 40 times their own weight — their resiliency lets them shrug off bumps or falls and handling abuse. They load compactly and ride safely. The patented locking device is easy to open, easy to close. Metal chimes are flash butt welded for greater strength.

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BUSINESS & INDUSTRY . . .

Swing Toward Stability

No constructive girdle, but possibly a slightly tighter belt, will be needed as the chemical industry doffs its "Korean emergency" uniform and puts on a sleeker suit of "readjustment civvies."

That chemical employment is not too swollen for a more peaceful period of normality-with-vigilance can be seen in data compiled this week in a nationwide survey by CHEMICAL WEEK. While some companies have trimmed their forces in certain plants and laboratories keyed to wartime demands, total chemical employment has been increasing slowly since June, giving grounds for the cheery surmise that the industry is shifting into peacetime production with no over-all dislocations.

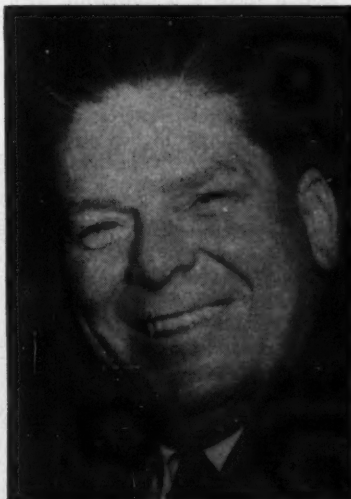
Some of the few recent instances of chemical plant layoffs appear to be due, in part at least, to the defense program cutback following the cease-fire in Korea. Among these are the closing of the Goodrich-operated synthetic rubber plant in Institute, W. Va., and the reduced production schedules at Dow's magnesium and chemical facilities at Freeport, Tex. But in most cases, the layoffs have been seasonal in nature. There's always less demand for paints, fertilizers and insecticides in the winter months.

Extremes Are Closer: Throughout the three-year fight to halt Communist aggression in Korea, employment in the chemical and allied industries has gone through a series of annual ups and downs, but the amplitude of these cycles has steadily dwindled (*see table*). Now, loose talk about a sudden recession notwithstanding, chemical employment appears to be continuing along the same wave-like pattern, with no sharp change in the immediate offing.

One reason for this increasing stability in the industry's payrolls is the fact that the nation's total production is holding up at a high level, with no real break in defense activity. Another factor: the U.S. chemical industry is both growing and growing up; it had intimate experience with reconversion problems in 1945-46, and was able to profit by that experience as the Korean armistice gradually materialized.

Still another possible cause is the determination on the part of employers and labor unions to avoid layoffs. Recent examples of this attitude:

- With one product edging out another in market popularity, Du Pont is counting on its expanding titanium pigment plant at Newport, Del., to absorb workers who otherwise might be laid off upon the expected closing



LABOR'S MITCHELL: In chemical employment, confidence aplenty.

of the company's lithopone plant, also at Newport.

- Anticipating lower production next year, the Oil Workers International Union (CIO)—which represents perhaps 20,000 employees in chemical and petrochemical plants—is authorizing its locals to accept lower weekly earnings, if necessary, in negotiating new contracts based on a shorter

work-week (36 hours), which would spread available work among more job-holders.

Bucking the Trend: The continuing rise in chemical employment stands out in sharp contrast with the general situation. September usually is a month of increasing employment, but this year—for the first time since the Korean invasion—the coming of autumn brought a dip in the nation's total employment.

CW queried the U.S. Bureau of Labor Statistics, got this forecast: unless the country is jolted by a major recession, chemical employment should remain at the same level, or even rise.

Demand for technical, scientific and professional people is still very high and should continue that way "for the next five or six years," says the Manufacturing Chemists' Assn.

Employment Stays Even: In most sections, chemical hiring and firing seems to be roughly in balance, with a little more emphasis on hiring. Thus in one Texas plant, some units are on greatly reduced production schedules and management is "battling to keep from having to lay off any operators"; but at a neighboring chemical works, the firm has been steadily increasing its professional, skilled and unskilled manpower, is now building up a team to man a new unit.

This is the mottled employment situation facing the country's new Secretary of Labor, James P. Mitchell, of New York. It's a situation that's squirming with changes, but the resultant of all those changes seems to be a rise toward even fuller employment in the chemical field. As far as unemployment worries are concerned, it appears that Mitchell will have to look elsewhere for his official headaches.

Fluctuations of War Chemical employment in U.S. during Korean conflict:

Year	Low Month	High Month	Range
1953	Jan. — 749,000	Apr. — 762,700	13,700
1952	June — 739,000	Nov. — 769,000	30,000
1951	Jan. — 729,000	Oct. — 766,000	37,000
1950	Jan. — 658,000	Dec. — 724,000	66,000

Nothing to Fear but Fear

Yes, there are soft spots in business; it would be foolish to say there aren't any. But the soft spots are scattered and minor: there is no sign now that they portend a major downturn in industrial production.

For businessmen, it's a time of wait-and-see. But it's not a time to talk ourselves into a depression.

That's the gist of present thinking by top business leaders. They see enough factors that—if not bullish in themselves—are at least "calish" enough to balance the soft spots. But these factors aren't as dramatic as are discouraging reports from salesmen, isolated plant layoffs (page 13) and the like.

It seems, though, to be a cumulative process. The pessimism is bluest in the big cities, where businessmen have a greater chance of rubbing shoulders with each other; away from the big cities, there's much more of a "let's not be stampeded" attitude.

No. Two View: For the chemical industry, this second group has a staunch member in Dow's Leland Doan. Speaking to financial analysts in Texas last week, he asserted: "I don't hold with current fears any more than I did in 1946."

"The chemical industry has always known cycles of shortage, expansion, catch-up and, sometimes, of surplus."

Acknowledging that some prices are softening—mainly in old-line heavy chemicals and in intermediates, Doan sees "compensating forces" in an increasing call for other chemical products. He lists plastics, synthetic fibers, detergents, antibiotics, and agricultural chemicals.

Is the chemical industry over-expanded? Yes, he admits, but "present overcapacity is not unanticipated. Rather it is a forecast result of an emergency which made it necessary for industry to expand some lines beyond expected civilian demands, and indicates that business was justified in asking for accelerated write-off of facilities built primarily for defense."

Another Voice: Diamond Alkali's executive vice-president John Sargent, gave an optimistic interpretation to not-so-encouraging situations.

Speaking to Great Lakes area security analysts last Wednesday, he called company operations for the past quarter "somewhat disappointing." Despite price increases on alkalis, chlorine and chrome products, shipments and profits have been down. Agricultural chemical business is now

operating at a loss (because of drought conditions in the Southwest), but Diamond is "not the least discouraged about the long-term prospects." The company's polyvinyl chloride plant, which started operations in July, is still a "considerable burden," but when operating at capacity could produce \$8 million in annual sales.

Nevertheless, says Sargent, "we look forward to 1954 with considerable confidence."

And the Government: Top business thinkers in the Administration are willing to let things rock along as they are, simply because they don't see serious troubles ahead. They are confident about the business future.

But, if there is a downturn, their plans are ready. The first facet of the program actually began last June when Federal Reserve lowered reserve requirements for banks. This has brought lowered interest rates on Treasury offerings, higher prices for bonds, and a reduction in the interest that finance companies pay on commercial paper.

The second portion is partly taken for granted: Jan. 1 will see a 2 to 10% reduction in personal income taxes and the expiration of the excess profits levy. Anything more depends on future business conditions.

Regular corporation income taxes are scheduled to drop from 52% to 47% next April. While Treasury may ask that the high rate be continued, Congress will press for the drop. Perhaps a 50% level compromise will be the answer.

Third line of defense is public works. There's little talk of this because the administration has confidence it won't be needed next year.

In Total: Perhaps the most encouraging part of the business situation is that so many people have been predicting a mild recession.

Many businessmen have—among other things—already cut down on excess inventories. Witness the fact that in August, U.S. inventories, seasonally adjusted, rose \$450 million, where the average for the five previous months was \$750 million. September's rise—if any—was undoubtedly less. Lowered inventories would tend to make any recession less severe.

These days, almost every businessman is going around with a frown on his face. But the soft spots that cause the frowns may not indicate a coming recession, may instead mean that part of the downturn is already behind us.

COMPANIES

Corporation charters have been issued to:

- Geigy Chemical Corp., Wilmington, Del., producer of insecticides and fungicides, with capital of \$1 million.
- Singletary Fertilizer Co., Lake City, S. C., producer of fertilizers, with capital stock of \$100,000.

• **The Lucidol Div. of Novadel-Agene Corp.,** which recently lost one of its Tonawanda plant buildings in an explosion (CW, Oct. 3) has started looking around for a new place to build. Just last week top executives were looking around the Buffalo area for a place with plenty of room—preferably more than 100 acres. The search indicates the company wants to take no chance of being hemmed in by nearby residential areas—which happened at Lucidol's present site and lengthened casualty lists. Indications are that the new location will be in the general Buffalo area, but will be some distance from metropolitan districts.

• **The Atomic Energy project** jointly conducted by Union Electric Co. of Missouri and the Monsanto Chemical Co. has been completed in its initial phases; joint sponsorship of the project has ceased, company executives say. Monsanto will continue the investigation under an extension of the original agreement with the AEC, authorized in June '51.

EXPANSION

• **Titanium Dioxide:** American Cyanamid Co. will build a plant to produce titanium dioxide pigments at Savannah, Ga. Construction work will be handled by Chemical Construction Corp., subsidiary of American Cyanamid.

• **Sulfur:** Brea Chemicals, Inc., Los Angeles, expects to construct a sulfur production plant at Rodeo, Calif. Its present plans include piping of waste products from Union Oil's refinery at Oleum, Calif., conversion to elemental sulfur. Applications for building permits have been submitted to the Contra Costa County Planning Commission.

• **Benzene, Toluene:** Great Southern Chemical's Corpus Christi plant hopes to get into production late this month. Under construction by Procon, Inc., and Fluor Corp., its products will include benzene, toluene, chemical specialties.



SPRAY TECHNIQUES: For students from Philippines, Pakistan, Indonesia, Ceylon . . . first-hand crop spraying demonstration.

True to Life

Just as trouble seems to come to those least able to cope with it, it's in the Asian countries where the struggle to produce sufficient food is hardest, that pests take the biggest toll of crops. This is the problem that's sending Asian crop specialists from the Philippines, Ceylon, India, Pakistan and Indonesia to Britain under the Colombo Plan, all expenses paid by English contribution.

The course, the second of its type run by Pest Control, Ltd., for Colombo Plan candidates (*CW*, Dec. 20, '52), covers every phase of crop protection—including assembly and maintenance of machines, spraying and research on pest and weed problems. Practical training gets an assist from an intensive series of lectures and demonstrations.

General aim: to teach basic techniques that can be adapted to meet the particular problems common to Asian countries—such as locust control, corn borers, sugar cane and mango-leaf hoppers. Time's allotted however for special trips to government and other research stations throughout England; safaris are made to industrial chemical centers in northern England. A special feature: study of grain storage problems.

The Philippines is the latest country to take advantage of the scheme, has two representatives currently in training at Cambridge headquarters, though others have participated in training courses on pest control in Australia and elsewhere.



BACKGROUND COVERAGE: Everything from the twin Arun pump (above) to the chemistry of insecticides (below) is discussed.



THEN SPECIALIZATION: Since unusual weed problems exist, attention focuses on special needs of Asiatic countries.

Blessed With Imagination

When a chemist decides to cut corporate apron strings and strike out on his own production venture, it's not news. But when a would-be lawyer, successful realtor and recognized interior decorator plunges into the swim and comes up with a million-dollar chemical "invention," there's bound to be a story. That's the case of Crystal Research Laboratories, Inc., Hartford, Conn., and its president Samuel I. Ward.

Behind Si Ward's latest project, the production of the simple home gadget that converts tap water instantly to chemically pure water, is a long line of widely varied interests and pursuits. "I started the Crystal Labs," he recalls, "to produce crystals to help in the war effort." Business boomed; Army-Navy E's paid tribute to hard effort, long hours. A shortage of adequately trained electronic technicians bore fruit in another field—Ward soon founded a school to train his own (and others') employees—now called The Ward School of Hillyer College.

Three other interests—offshoots of the crystal business—weren't long fomenting. The first, an ultra-sonator designed to break the dormancy of seeds through sound waves, led to work largely paralleling that of the Russians, became an invaluable aid to modern farming. The next, another sound-wave device thought to have healing power for gallstones, was turned over to the Yale University laboratories for further investigation. The last, the Metranomer or flash baton, found a market in music circles, was turned over under license to H & A Selmer, Inc. of Elkhart, Ind., a year ago.

Spawned By Necessity: "But all the while," mused Ward, "I was looking around for an idea to take the place of our crystal production at war's end. The answer came one day when I realized that the slow rate of distilling water in our plant was a major handicap. We weren't big enough to invest in costly equipment, and there was nothing adequate on the market to satisfy our needs."

Then it occurred to him that Rohm and Haas' Amberlites—using the principle of ion-exchange of two synthetic resins—solved the problem. When water passes through a mixture of the resins (one cationic, the other anionic) dissolved metal ions and salts are removed, leaving relatively mineral-free water.

The market for such a system was ready-made. Hospitals, dental offices,

service stations, schools, laboratories, jelly manufacturers, steam iron users, amateur home photo-finishers use a creditable amount of distilled water annually. If the resin mixture could be supplied in a handy form, the success of the venture was sealed.

Plax Corp. was Ward's next port of call. Its supply of available 4-, 6-, 8-, and 10-oz. polyethylene bottles answered the vehicle question. Only minor changes were necessary to enable Ward to put together the first Deeminac—good for 250 fillings of a 6-oz. bottle before replacement of the resin filter. Today's purchase list of bottles—in all sizes—runs over a million a year. Some 22,000 lbs. of resins are bought from Rohm & Haas each



WARD: "Everyone thought I was daffy—going into an industry I knew absolutely nothing about."

year, the total intake by Crystal Labs should reach up into the seven-figure bracket by year's end.

There's Always a Woodchuck: Distribution has been the only real headache, Ward says. Mainly it's a question of educating the public to the advantages of using mineral-free water around the house. General Motors was an early convert, saw in Ward's idea a chance to enable its battery users to have an easy means of supplying battery water. General Electric (discouraged by its competitors' publicity condemning use of ordinary tap water in steam irons) blew hot, then cold, finally decided to stay clear of any commitment.

Distribution is mainly handled today through laboratory and technical salesmen, aided by distributors in the automotive and housewares fields. Present estimates concede that less than 5% of this year's total production is labeled for export, but indications point to further progress, particularly in South American countries.

Emphasis now, according to the prexy, is to increase facilities for large-scale gravity-fed units for use in the electroplating, glass manufacturing, battery servicing, and television fields. Further in the future: a unit adaptable for home cooking and drinking purposes. Relative to this facet of operations, Crystal Labs reveals it's one of three companies invited by the AEC to "provide a means for decontaminating water of radioactive materials." A plan has already been submitted to civilian defense authorities for setting up large-scale units in case of wide-scale atomic attack, but to date it has stirred up but little interest. Reason given: a lack of funds at local organization levels.

Ward, a thwarted lawyer, has patents pending, claims that the closest thing to his own product on the market today is Wantz, an Illinois company's system that involves putting resins over a Mason jar.

What of Ward's former home-decorating and real estate interests? "The Crystal Labs and the Deeminac keep me busy enough," he says. "And there are always new fields to conquer if you keep your eyes open—even if you're only a dilettante scientist."

Potential in Mexico

Latest survey of the sulfur situation in Mexico, made by the Sulphur Exploration Syndicate, points to a 400,000-ton capacity by 1956—of which 300,000 tons will be tagged for export. Expansion predictions include surface mining projects and recovery from natural gas units—all given a governmental stamp of approval.

Barring mishap the score in 1956 should read:

- Annual production of 200,000 tons from three major salt dome projects by Mexican Gulf Sulphur Co., S.A.

- Capacity of 300,000 tons/year from Pan American Sulphur Co.'s subsidiary, Gulf Sulphur de Mexico S.A.'s Frasch plant at Jaltipan.

- Recovery of 120 tons/day of pure sulfur from Petroleos' plant in Posa Rica gas fields.

Also possible: 250,000 tons from Compania Azufre de Vera Cruz' contemplated La Salinas unit.

U.S.I. CHEMICAL NEWS

October 24

★

A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries

★

1953

New U.S.I. Sulfuric Plant Now on Stream in Midwest

U. S. Industrial Chemicals Co., Division of National Distillers Products Corporation, began additional production of sulfuric acid recently at a new 400-tons-per-day contact process plant in strategically-located Tuscola, Illinois.

U.S.I., already an important sulfuric acid supplier to industry, operates plants for manufacture of this basic material at Dubuque, Iowa, and De Soto, Kansas. The new plant, located in an area of growing agricultural and industrial activity, will answer the needs of sulfuric acid users in the Midwest for a new, easily accessible volume supplier.

U.S.I. is producing all grades of virgin acid, including electrolytic and oleum, at Tuscola. Limited quantities of good quality process-spent acid will also be available for such uses as pickling and fertilizer manufacture.

Further information regarding this important new source of sulfuric acid may be obtained from the U.S.I. office nearest you, or from U.S.I.'s Chemical Sales Department, 120 Broadway, New York 5, New York.

New Floating Roof Cuts Oil Evaporation Losses

A novel floating roof which replaces present steel floating roofs used on crude oil storage tanks has been revealed in the oil industry, according to a recent report. Claimed to be capable of saving the industry millions of dollars in evaporation losses alone, the roof consists of a layer of tiny plastic spheres filled with nitrogen. The spheres, or microballoons, averaging 0.001 inch in diameter, are either mixed with the crude oil on its way to storage or spread over its surface after it is in the tank. Layers about one inch thick have been found best, it is said. The resulting plastic blanket rises and falls as oil is pumped into or out of the tank. In field tests, the roof is reported to have cut evaporation losses by as much as 87.5 per cent.

Review Developments in Paint Industry for 1952

Last year's outstanding developments in the paint industry are reviewed in a 76-page reprint recently made available. The comprehensive summary includes discussions on the effects of business and government on the industry, new paint products, important developments in drying oils, fatty acids, waxes, chemical intermediates, resins, lacquers, emulsion paints, plasticizers, pigments, and paint production, testing and evaluation.

U.S.I. Warns Car Owners Against Re-Using Permanent Anti-Freezes; Danger, False Economy Emphasized

New Educational Campaign Explains How Anti-Freeze Re-Use Can Result in Costly Damage to Engine and Cooling System; Government, Automotive Agencies Have Issued Similar Warnings

In a new educational campaign directed to car owners and service dealers, U.S.I. has joined with various government and trade agencies in publicizing the dangers associated with the re-use of permanent type anti-freezes from season to season.

The U.S. Bureau of Standards, the American Automobile Association, and members of the trade press are among those who have issued previous warnings against this practice.

Depletion of Inhibitors to Blame

According to findings of these organizations, extensive damage to engine and cooling system can result if anti-freeze is left in the cooling system through the summer (or even if it is drained and saved) for re-use during the following winter. The damage is attributed primarily to changes that take place in the inhibitors in the anti-freeze rather than to loss of protective properties in the anti-freeze itself. Draining out the old anti-freeze, thorough flushing of the cooling system, and starting the next winter season with new anti-freeze has been shown to be far more economical than the replacement of water pumps, radiators, and even engines which may be required if these precautions are not followed.

Re-Use Can Be Costly

The service life of inhibitors in any anti-freeze is shortened by many factors. Long driving mileage, high engine speeds, air or com-

MORE

LP-Gas Supplies Increase With Opening of New Plant

New supplies of liquefied petroleum gas are now available to industry through the recent opening of National Petro-Chemicals Corporation's giant natural gas extraction plant at Tuscola, Illinois. The new plant marks the first step in completion of the \$44 million joint enterprise of National Distillers Products Corporation and Panhandle Eastern Pipeline Company.

When completed, the National Petro-Chemicals operation will include the world's largest ethylene unit, which will provide raw material for the production of 40 million gallons of synthetic ethyl alcohol per year. The ethylene will also be the starting point in the manufacture of ethyl chloride and later, polyethylene.

The extraction plant processes 400 million cubic feet of natural gas per day. Daily production of propane, butane, isobutane, and natural gasoline totals 450,000 gallons, and is distributed by Phillips Petroleum Company.



Average annual minimum temperatures are shown on the above map, adapted from one by the U. S. Weather Bureau. On the average, lower temperatures occur about every other year.

October 24

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U.S.I. CHEMICAL NEWS

★

1953

CONTINUED

Anti-Freeze

bustion gas leaks into the coolant, rust deposits, etc., all bring about chemical changes which deplete inhibitors and increase corrosive conditions within the cooling system. When this happens, rust formations, sludge resulting from oil leaks, and debris resulting from erosion of hoses eventually can clog enough of the radiator to reduce its effective capacity to the danger point. Thus the few cents saved by saving the same anti-freeze through several seasons can easily turn out to be a false and very expensive economy.

Facts Confirmed by Bureau of Standards

In the words of Government scientists (U.S. Bureau of Standards Circular 506), anti-freeze "is continually depleted by use, and will eventually reach a corrosive condition. In view of the comparative cost of anti-freeze and of even so minor a replacement part as a water pump or radiator, it is certainly cheaper to use new solutions (of anti-freeze) each year."

In its educational effort, U.S.I. is bringing this message to anti-freeze users in a manual and in consumer advertisements for its time-tested anti-freeze products, U.S.I. Permanent Anti-Freeze and U.S.I. Super Pyro Anti-Freeze. Both of these favorites are again being offered through dealers across the country for complete coverage of the car owner's anti-freeze requirements. But first, for an entirely worry-free winter, U.S.I. strongly advises that every cooling system be drained and flushed before new anti-freeze is put in.

Employee Safety Outlined

Instructions in safe work habits, applicable to employees in most plants, are outlined in a new 32-page employee rules manual. The practical experiences of workers, supervisors, and safety specialists have established the safe practices covered, beginning with a list of general safety regulations and continuing with special sections on gas cylinders and compressed air, protective clothing, fire prevention, materials handling, and other related topics.

Prove Methionine Adds \$\$ to Broiler Profits

Recent experimental work at a leading university has shown in dollars and cents what the addition of methionine to poultry feed can mean to the commercial poultry grower. In broiler trials under field conditions, additions of 0.05% DL-methionine (one pound per ton) to the feed resulted in more rapid growth, greater feed efficiency, and better feathering during a 10-week growing period than was observed in birds receiving no supplementary methionine. At the end of the period, these improvements added up to an average increased return over feed costs of \$26.88 for each thousand broilers marketed, according to the report.

Use Vacuum Sublimation In New Industrial Process

Sublimation at reduced pressures has been adapted industrially to separation and purification of certain chemicals, according to a recent announcement. The method was evolved from experience with freeze-drying in the preparation of various biologicals and vaccines. It is now being used in the production of several pure chemicals, including salicylic acid, in quantities of several tons per day, it is said.

In using vacuum sublimation, the impure product is placed in a closed, jacketed vessel, pressure is reduced by a vacuum pumping system, and the charge is heated. By manipulating pressures and temperatures, certain portions of the mixture can be made to volatilize and pass off through the line. For some products, the one desired will sublime and pass off; in other cases, impurities will volatilize, leaving the pure product behind.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U. S. I.

Returning Wastes to the Soil—booklet recently issued emphasizes the importance of this subject, discusses some of the problems involved and some of the methods used to solve them. (No. 970)

A new insulation applied like paint is claimed to bond to shaped surfaces in a seamless, continuous cover, can be used inside and out to stop about 80% of radiated heat passage. (No. 971)

A new air purifying machine operates on a patented washed air principle, is small in size, and is said to remove 92% of pollen and dust. Capacity is 200 cubic feet of air per minute. (No. 972)

To make standard tire inner tubes puncture-proof, a latex compound is now marketed in a tube which is screwed onto the tire valve, the contents squeezed inside the inner tube, and the tire re-inflated to normal pressure. (No. 973)

A Greek lettering guide recently made available consists of a plastic template engraved with 1/4-inch upper and lower case letters to make hand lettering of Greek symbols easy and uniform. (No. 974)

To solder aluminum with any plain solder, tin, lead, zinc, cadmium, and alloys of these metals, a new non-corrosive paste flux is said to allow use of any torch or soldering iron, is available for both industrial and home use. (No. 975)

A one-piece adjustable work tower for overhead maintenance work such as painting, lighting and cleaning, telescopes up and down, is easily moved into place, and is equipped with removable outrigger legs for greater stability. The manufacturer states. (No. 976)

A substitute for ice is available in sealed vacuum cans, each of which when frozen is reportedly equivalent to 3 pounds of ice in refrigerating value. Product can be re-used many times, is expected to be useful to sportsmen and in photography and laboratory storage. (No. 977)

A new catalytic air-cure coating, completely impervious to all known aircraft hydraulic fluids, alcohols, esters and petroleum hydrocarbons, comes in corrosion-resistant primer and full gloss colors for use on all metals and woods. (No. 978)

To protect metals against flame temperatures hotter than their melting points, a new "paint-like" material is reported to be effective for as long as 10 seconds. Compound withstands lower temperature cycles indefinitely, it is said. (No. 979)

PRODUCTS OF U. S. I.

ALCOHOLS

Amyl Alcohol (Isomyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro® Anti-Freeze
U.S.I. Permanent Anti-Freezes

ETHERS

Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANOLS

Ansol® M
Ansol® PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Diatol®
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)

Arochem®—modified types
Arodure®—urea-formaldehyde resins
Arofen®—pure phenolics
Aroflat®—for special flat finishes
Aroflint®—room temperature curing phenolic
Aroplas®—alkyds and allied materials
Aroplac®—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

Allerthrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrethron® Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS

Indalone®
Triple-Mix Repellents

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS

Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G® 80
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay®
U.S.I. Vitamin B₁₂ and Antibiotic Feed Supplements
Vocatene® 40

OTHER PRODUCTS

Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
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Texan Takes Over

Under new management for the next two months or more is the largest labor union in the chemical industry—the International Chemical Workers Union (AFL), whose president has been out of action due to a heart attack last month.

While Herbert A. Bradley recuperates at his home in Akron, his office will be filled by Edward R. Moffett of Houston, Tex. Moffett helped Bradley form the union in 1944, has since held the job of first vice-president.

In choosing Moffett as acting president at the recent emergency meeting, the ICWU executive board struck a "solidarity" theme. There's been nibbling antagonism toward Bradley among some members, but Moffett is regarded as a "loyalist," having taken the lead in quelling an anti-Bradley uprising during the union's 1952 convention. Now 59, Moffett worked in a Texas chemical plant before becoming a full-time unionist.

LEGAL.

Dow Estate: Filed recently in Midland (Mich.) Probate Court, an inventory revealed that the late Mrs. Herbert H. Dow, whose husband had founded Dow Chemical Co., left an estate of \$29,253,403. Included were 724,754 shares of Dow common stock, valued at \$23,192,128. Mrs. Dow bequeathed 150,000 shares of that stock, valued at \$4.8 million, to the Herbert H. and Grace A. Dow Foundation. Debts, expenses of administering the estate, and inheritance and other federal taxes are estimated at \$16.5 million.

Pollution Probe: There's no letup in air-pollution litigation at Louisville, Ky., where National Carbide recently "beat the rap" in a criminal case. In the latest development, Commonwealth's attorney A. Scott Hamilton has subpoenaed officials of chemical and other industrial plants to testify at court of inquiry, purpose of which will be "to get an over-all picture of the West End dust problem." Among company officials summoned are those of Goodrich, Carbide and Carbon Chemicals, Kentucky Synthetic Rubber, Du Pont, National Carbide, and Reynolds Metals.

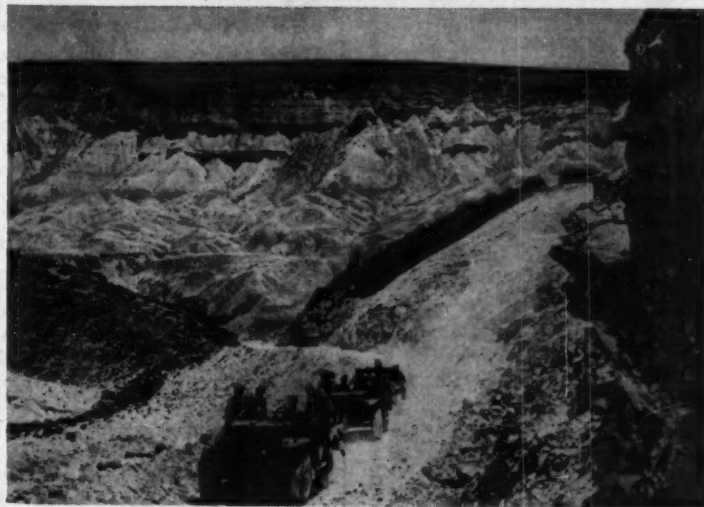
Meaty Issue: Ohio meat dealers—particularly the five that were recently fined sums of up to \$100 each—are likely to be out of the market for sodium sulfite from now on. Use of

this preservative in meat is illegal in Ohio, and state meat inspectors have stepped up enforcement lately, bringing butchers into court for prosecution. Clark W. Van Schoik, chief of the food and dairies division of the state agriculture department, said his men could spot sulfiting almost immediately.

Company Seeks Compromise: With court action looming as the only other step, Corn Products Refining Co. is offering to compromise its tax dispute with the Tulos-Midway Independent School District near Corpus Christi,

Texas. According to school district trustees, Corn Products owes \$120,000 for 1952 and 1953 taxes; but the company asserts its bill should be no more than \$86,571. Corn Products offered to pay that amount and to toss in a \$13,500 gift providing the district would set valuation of the plant at \$12.9 million and hold it there for 20 years. The company also offered to lend money to the district and buy its bonds to keep the school from closing.

Pipeline Pangs: Natural gas, of concern as fuel and feedstock to numerous



King Solomon's Mines

Back of Israel's struggle to wrest the Negev back from desert wasteland is the importance of the region to the economy. Besides Dead Sea potash and Central Negev phos-

phates, there's copper (where King Solomon's workers refined it 3,000 years ago) and the hope of oil. Water has been discovered; roads are currently under construction.

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BUSINESS & INDUSTRY.

chemical and petrochemical companies, is a favorite subject for litigation this fall. News notes on this topic this week:

- At Alexandria, La., Gulf Interstate Pipeline Co. seems to be winning its fight to be allowed to pump natural gas out of Rapides parish (county) without restrictions sought by the parish police jury. U.S. District Judge Ben Dawkins has enjoined the police jury from interfering with the company's plans to lay a pipeline across the parish, and has declared unconstitutional the jury's ordinance that pipelines must be laid at least 20 feet under parish roads.

- In Houston for an appearance before the Texas Mid-Continent Oil & Gas Assn., Chairman Jerome Kuykendall of the Federal Power Commission predicted that the U. S. Supreme Court would accept for review the Phillips-FPC rate regulating case (CW, Oct. 3). Kuykendall said his agency has taken "all steps within its power" to obtain a court review of the Circuit Court's decision in that case.

- Six-week Study: This week, Federal Judge Walter La Buy in Chicago is scheduled to begin his examination of post-trial briefs for both sides in the government's big antitrust case against Du Pont, General Motors, and U. S.

Rubber Co. Then, on about Dec. 7 or so, the judge will begin hearing oral arguments, expected to take about two weeks. Some time after Christmas recess, La Buy will begin working on his opinion and final order.

- **Explosion Probes:** Law officers have been looking for evidence of sabotage or criminal negligence in two recent chemical plant explosions.

- At Buffalo, N.Y., the district attorney's staff is probing last month's series of explosions that wrecked the plant of the Novadel-Agene Corp.'s Lucidol division. District Attorney John Dwyer called in all of the plant's supervisory personnel as first witnesses.

- City authorities have begun an investigation of the blast that literally demolished the one-story dry ice manufacturing plant of Pure Carbonic Co. in Scranton, Pa.

- **Promise Wins Dismissal:** In Philadelphia's continuing campaign against air pollution, latest defendant in municipal court was Nicetown Dye Works. The complaint was based on reports by women living near the plant that too much smoke and fly ash was coming out of the plant's 180-foot stack. Upon the company's promise to correct the situation within 60 days, the court dismissed the charge.

What's an End Product?

Call it a sales tax or call it an excise tax, there is still a chance that chemical producers may be faced with 5 to 8% impost on the manufacturer's level, with all its attendant problems.

The chances of such a tax rise and fall with every shift of the Eisenhower administration's budget outlook. When the picture looks grim, talk increases about a manufacturing-level tax. If something happens to make the picture look better—such as the recent decision to stick somewhat closely to present defense spending levels—prospects decline for Congress to vote such a tax.

For an administration dedicated to business-type methods, a tax at the manufacturer's level has advantages—primarily that it would be collected from some 300,000 manufacturers, instead of from some three million retail stores. A corresponding disadvantage is that retailers would charge a mark-up on the tax.

But a much knottier problem facing the Administration if it wants to put a manufacturer's tax on chemical production is this: How can one define

what products are "end products" subject to taxes? (There is no thought of taxing at more than one manufacturing level.)

The distinction on end products is, of course, a complicated one. From the government's standpoint, the fact that most of the distinctions would have to be made by the manufacturer or processor means such decisions would have to be policed. This would entail training many personnel.

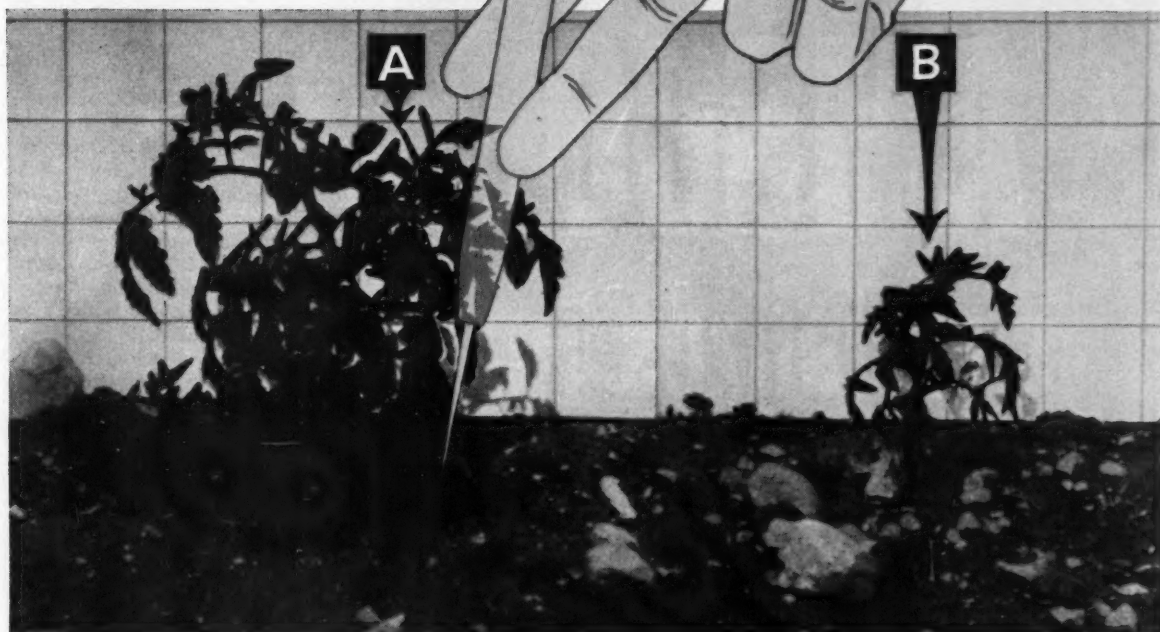
Most of the people who argue for a manufacturer's tax think that Congress would have to spell out in great detail the application of the tax to industries like chemicals where end uses are varied.

Make it Simple: One possibility for simplification would be the adoption of a system used in Canada since World War I. In this, all manufacturers obtain licenses; invoices then must show license numbers; if the sale is made to someone without a license, tax (which now runs at 8% there) is charged. Even so, administration is a burden.

An exemption from tax for products

A phosphate*

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B & I

going into food already appears certain. This would include intentional food additives. But, carrying this argument further along, whether pesticides and such other materials that go into food production would also be exempt is another question.

Into the Hopper: Rep. Noah Mason (R., Ill.), is planning to file a bill next January establishing an 8% sales tax on sales made by manufacturers. The National Assn. of Manufacturers advocates a 4½-5% level. But though Mason is drawing up a bill, he feels the idea has little chance of adoption. Mason is a member of the tax-writing House Ways and Means Committee, whose chairman, Rep. Dan Reed of New York, and various other members agree with his prediction.

Despite such forecasts, the Treasury Dept., backed by the President, may suggest a manufacturer's sales tax next January. Treasury officials were known to be seriously considering a retail tax up until the time the idea was killed by the President. The fact that he didn't bar a manufacturer-level tax makes this a natural alternative.

But perhaps even more basic is the question of whether, if an excise or sales tax is turned down by Congress, the Treasury might have to turn back to corporation taxes as the most logical way to raise more money.

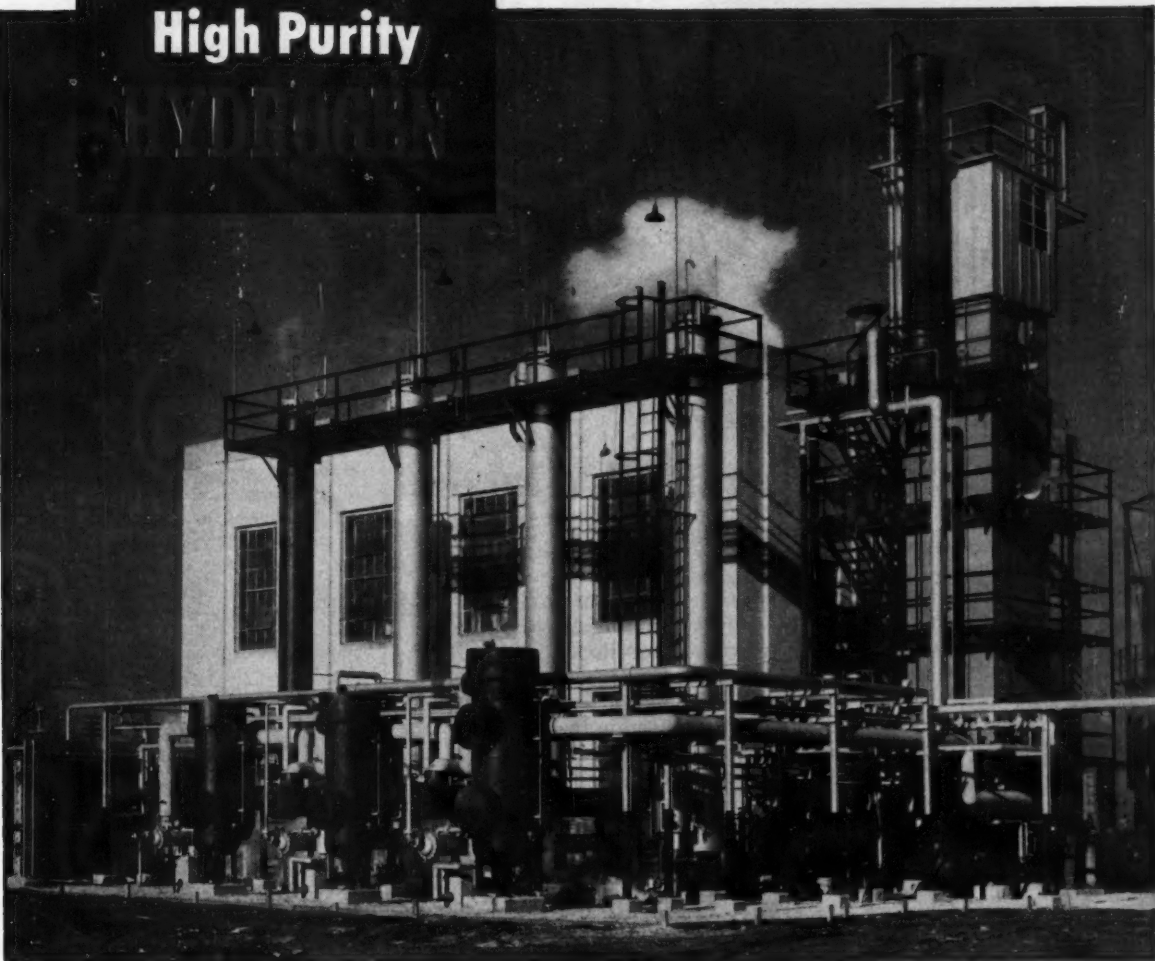
LABOR

Attuning Process: From Kentucky comes a hint that chemical labor contracts being renegotiated during this readjustment period will involve putting local wage rates into tune with the national average rather than setting new records. At Brandenburg, Ky., employees at Mathieson's Doe Run hydrocarbon plant have voted to accept a new contract with moderate wage increases of 2¢ to 5¢/hour that bring the plant average up to about \$1.85, according to the AFL Firemen & Oilers.

No Wage Breather: It seems that no labor group wants to pause for a breather in the big race for ever higher wage rates. But now—with a possible readjustment period likely to curb the headlong pace for a time—the chemical industry's employees aren't doing badly in the high-pay steeplechase.

One gauge of this favorable standing is the latest set of figures from the Bureau of Labor Statistics, showing that chemical wages climbed another 2¢/hour between June and July. Comparison of average hourly earnings since the Korean invasion indicates that chemical wages have been

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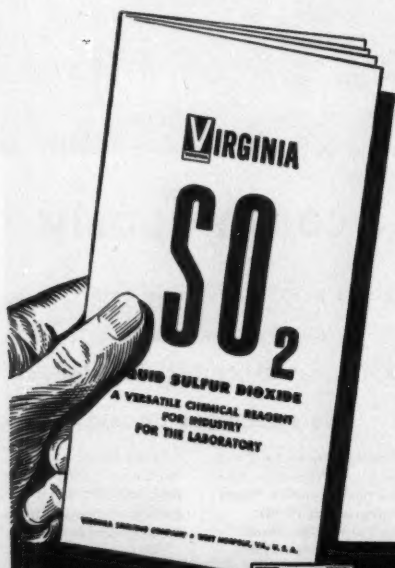
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July 1952	1.73	1.65
July 1951	1.66	1.60
July 1950	1.53	1.46

An equally favorable comparison is suggested by last week's report by the Department of Commerce that family income in the United States climbed by an average of \$16.35/week between 1944 and 1950. For chemical production and maintenance workers over that same period, the increase was about \$18.70/week.

Union Shop Test: Of potentially deep importance to industrial relations men throughout the country—and particularly in those states having "right-to-work" laws—is a lawsuit scheduled for trial starting Nov. 16 in Amarillo, Tex. The case is nominally between the Atchison, Topeka & Santa Fe Railroad and a group of its employees, but Judge E. C. Nelson's eventual decision may affect hundreds of contracts in many states. At issue: effect of the Texas right-to-work law on employees who live in Texas but whose company and union negotiate on a country-wide basis, validity of the state law in the face of federal laws permitting union shops, and constitutionality of such federal laws.

Interunion Ire: In two of labor's current tension spots, it's one union against another instead of union vs company.

- The AFL has admitted its failure to straighten out the Iron Workers' dispute that's been holding up the atomic energy project at Paducah, Ky. William Sanders, leader of the 33 striking Iron Workers, has accused a rival local of the same union of having tried to intimidate the strikers.

- Possibly by Nov. 1, the National Labor Relations Board's regional office at Cincinnati will announce its decision on the contested neoprene plant election at Louisville, Ky. It's likely that the board will either recognize the independent Neoprene Craftsmen's Union as winner or grant the new election demanded by the International Chemical Workers Union (AFL).

Cussing Is Out: Another organization offering advice to chemical management on labor matters is the Society of the Plastics Industry, New York, which has been issuing occasional industrial relations bulletins listing numerous labor-management developments that seem to hold a clue to

CHEMICAL PROGRESS

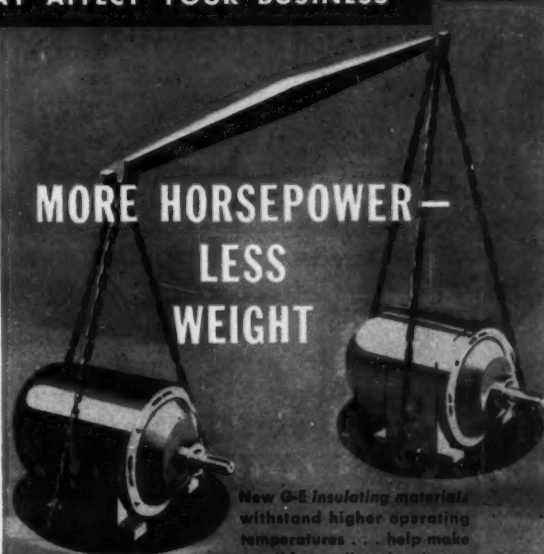
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future trends. Among items in the current issue: unemployment compensation eligibility of a union official discharged for inciting an illegal work stoppage; legality of an employer's private poll to see if his employees want to be represented by a labor union, and a company's right to refuse to rehire a striker who had cursed employees going through picket lines.

Prosperity Holdover: But it looks as though readjustment in the U.S. isn't necessarily coinciding with similar economic weather in Canada. New contracts negotiated by the International Chemical Workers Union (AFL) in Canada call for larger increases:

- An average of 8½¢/hour for employees at North American Cyanamid's Welland Works, Niagara Falls, Ont., bringing the top rate in the plant to \$1.93/hour.

- A range of 10 to 20¢/hour for workers at Dominion Alkali & Chemical's plant in Beauharnois, Que., with 7¢ of the increases retroactive to last May 15.

Morale, Misfits, Team Play: For executives concerned about improving the caliber of supervision in their plants, the American Management Assn. is arranging a two-day conference in Chicago's Palmer House on Nov. 30 and Dec. 1. Topics include: Is the Supervisor on Management's Team, Weeding Out Misfits in Advance, How to Size Up a Man's Performance, What Raises a Man's Morale.

Share-the-Job Plan

Industrial management is as much in favor of high-level employment and steady pay for its workers as are the labor unions, the Chamber of Commerce of the U.S. declares in a reply to the CIO's demands for a guaranteed annual wage.

But, the Chamber goes on to say, the guaranteed annual wage plan not only would be difficult and possibly illegal to put into effect in some industries; it would probably fail to beget the economic stability that its proponents aim for.

With at least two unions in the chemical field—the CIO Chemical Workers and the Oil Workers—beginning to take up the guaranteed wage cry, management men may want to read the Chamber's new booklet, "The Economics of the Guaranteed Wage." One argument: Suppose the horse-buggy manufacturers had been obligated to keep on paying full wages after advent of the Model T?

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What's Happened to DPA Phthalic Anhydride Certificates of Necessity?

Company	Plant Location	Amount Certified	Per Cent
COMMITTED			
Allied (Barrett Div.)	Chicago, Ill.	\$4,110,000	50%
American Cyanamid	Bridgeville, Pa.	6,165,000	30%
Monsanto	St. Louis, Mo.	4,880,650	50%
UNDECIDED			
Sherwin- Williams	Chicago, Ill.	1,287,200	50%
CANCELLED			
Koppers	Kobuta, Pa.	4,000,000	50%

Note: Write-offs granted in the amount of \$310,000 for phthalyl chloride to Monsanto does not add to total U. S. phthalic anhydride production quotas.

Still Off the Pace

Unlike most Defense Production Administration goals abetted by certificates of necessity, that set for phthalic anhydride facilities hasn't appealed to many chemical companies. Latest roll-calls show that one of the five companies that filed for write-offs has cancelled, another is still undecided whether to expand. The three survivors—Allied, Cyanamid and Monsanto—are due to boost production by some 80 million lbs. before Jan. 1, 1955.

Back in 1951, U.S. capacity for the production of phthalic anhydride came to 227.7 million lbs./year, an upswing of over 700% above pre-war figure.* Yet DPA—at the outbreak of hostilities in Korea—determined that it still wasn't enough to insure adequate internal protection in the event of an all-out hot war. The new goal was set at 367.7 million lbs.—expansion required then amounted to 140 million lbs. annually. Response wasn't immediately forthcoming. Finally Allied's Barrett Division decided to go ahead, built a \$4,110,000 plant at Chicago, Ill., for which it received a 50% tax write-off. Using a vapor-phase oxidation and naphthalene set-up, production got under way last June, will turn

* Only 31 million lbs. of phthalic anhydride were produced in 1936.

out an estimated 30 million lbs. of phthalic anhydride per year.

American Cyanamid's plant, under construction at Bridgeville, Pa., with the aid of a \$6,165,000 write off at 30%, was reportedly 85% completed when strike difficulties brought work to a standstill. Now under way again (CW, Oct. 10), finished units will double present Cyanamid phthalic anhydride output, should give the company a total of some 48 million lbs./year.

Monsanto's facilities are likewise still under construction, when on-stream will approximately double output—now unofficially listed at 25 million lbs. per annum. Originally, according to DPA files, Monsanto asked for over \$5 million at 50%, was scaled down to \$4.8 million and granted a \$310,000 additional certificate to produce phthalyl chloride at St. Louis, Mo. The latter production is slated to lift Monsanto's capacity 300%.

Gathering the Tallies: When all three certificate-backed projects finally come in, U.S. production (reckoned by the Tariff Commission at 228,576,000 lbs. last year) should top 300 million lbs.—or more. Should Sherwin-Williams decide to use its certificate and

Koppers decide to go ahead without a fast tax write-off, the figure might hike up another 40 million lbs.

In Sherwin-Williams' case, the contemplated expansion won't be large; it's quoted as a \$1-million investment to increase capacity at its Chicago fluid bed plant (CW, Feb. 23, 52). Actually the company is a minor factor in the over-all picture, now turns out between 2-3 million lbs./year—and even with the added facilities shouldn't go above 10 million. Koppers' plans were more grandiose: company executives asked for and received a tax write-off for \$4 million at Kobuta, Pa.—a sum calculated to drop 30 million lbs./year of phthalic anhydride into the laps of resin and dyestuffs manufacturers. But the request was subsequently cancelled in August 1952 "at Koppers' request."

Sum and substance of the phthalic picture today is that much of the early glamor surrounding anhydride production has now rubbed off. Potential producers, often scared off by word of processing hardships, think twice before plunging into the race.

DPA still thinks its 1953 potential goal will be met—but there's not as great a scramble to "get there firstest" as in many other chemical production categories.

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From Research to Reality

Exit the Platoon System

Doubtlessly coincidental, it was at the opening of this current football season, in which the "platoon system" was ended by repeal of the free substitution rule, that the drug industry opened its drive to end free substitution of drugs.

First and foremost action in this drive was preparation of a model "anti-substitution" bill, drafted by a special committee of the New York Board of Trade's section for Drug, Chemical & Allied Trades (DCAT). This model bill, written by attorneys for major pharmaceutical makers, is to be suggested to law makers in each state that doesn't already have such a law on its books.

Kernel of this model bill: prohibition of "substituting a different drug, brand of drug, or drug product of a different manufacturer or distributor for any drug, brand of drug, or drug product ordered by prescription or otherwise."

Un-unified Agreement: Although the various manufacturing and retailing groups throughout the country haven't formally resolved to work together on this drive, there exists among those groups what attorney Walter Beachboard of Smith, Kline & French Laboratories calls a "united feeling." And Beachboard, who was a principal author in drawing up DCAT's model bill, believes that much can be done by those organizations, even though they're "un-unified."

The only opposition to anti-substitution legislation comes from retail druggists, particularly the smaller drug stores that operate on a limited budget and don't like to have too much money tied up in a big inventory of pharmaceuticals and C.P. chemicals.

Large drug firms, such as Walgreen and Whelan, have no objection to anti-substitution laws. J. Osterweil, Whelan's buyer of medicines and drugs, told CW that his firm "won't tolerate" substitution; that it doesn't handle any "secondary-type" drugs, and that an employee who substitutes one product for another would be discharged.

But John Dargavel, executive secretary of the National Association of Retail Druggists, says his organization is "absolutely opposed" to the wording of the anti-substitution bills. The association condemns the substitution of an inferior product for a good product, he explains, but doesn't accept the manufacturers' definition of substitution. He blames manufacturers

for copying each others' products with different trade names, complains that a druggist now has to invest 10 times as much money in inventory and still doesn't have a complete stock.

Difference in Drugs: The other side of this argument is expounded by people like Beachboard and like Carl Raiser, SK&F's manager of trade relations. Their theme: the sole purpose of anti-substitution laws is to protect the public.

Too many people, including drug-



SK&F'S BEACHBOARD: For all drug makers, a rallying point.

gists, think there isn't much difference in similar products, whatever the trade name, Raiser says. But, he declares, the brand does matter. "There are differences of ingredients, manufacturing controls, and know-how." Also, he feels, a manufacturer is entitled to returns on whatever he invests in advertising and research.

Physicians who prescribe specific products want those products used because of their known strength and effect, Beachboard adds. Substitution might result in serious illness because of improper medication. Too, a physician may judge one product on the basis of how a patient responds to a substituted product.

Accusations of Avarice: Some druggists, says Beachboard, substitute an inexpensive product of some unknown manufacturer, then sell it at the same price listed for big-name brands. Fortunately, he adds, most druggists are too ethical to resort to that practice.

On the other hand, Dargavel charges that the manufacturers themselves

show greed in backing bills with restrictions on substituting brands. He denies that any public health interest is involved in using one reliable manufacturer's brand of a given pharmaceutical when another brand has been prescribed, argues that substitution has been made almost unavoidable by the multiplicity of virtually identical products.

While physicians generally favor the ban on substitution, medical societies aren't crusading for adoption of the bill. More outright advocates of enactment are the American Pharmaceutical Assn., National Assn. of Boards of Pharmacy, and the Conference of State Secretaries Assn.

Pharmacy colleges instruct their students that a prescription must be filled exactly as it's written. Dean E. Emerson Leuallen of Columbia University's College of Pharmacy, believes a manufacturer has a right to his own trademark and a physician has a right to specify products by brand, suggests that a pharmacist who's out of a certain ingredient should telephone the physician to get permission before substituting.

Three States Lead: Oregon's anti-substitution law is too new for judgment on how well it works, Beachboard says, but the laws in New Jersey and California are proving effective. Each of those three acts flatly forbid any deviation in quality, nature, brand or company of manufacture from drugs specified in M.D.s' prescriptions.

Certain other states have laws that DCAT deems too vague, leaving it up to state pharmacy boards to interpret what practices are nefarious enough to justify revocation of pharmacists' licenses. In states that don't have anti-substitution laws, drug companies have to do the policing for themselves, and an expensive task it is, Beachboard remarks.

In those states, the more zealous drug makers employ "shoppers," sometimes on a part-time basis, to take prescriptions into drug stores and report all substitutions. For example, a prescription might call for Abbott Laboratories' "Nembutal," and the pharmacist might take any yellow capsule and fill it with sodium pentobarbital. This kind of substitution was the subject of recent litigation in U. S. District Court, New York (CW Newsletter, May 9), with Abbott winning an injunction halting further "unfair competition" on the part of the druggist.

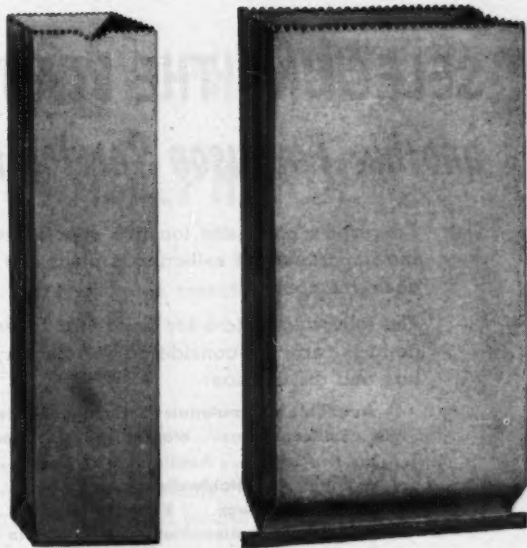
Smith, Kline & French, reports Beachboard, has been successful in 15 similar suits in New York, New

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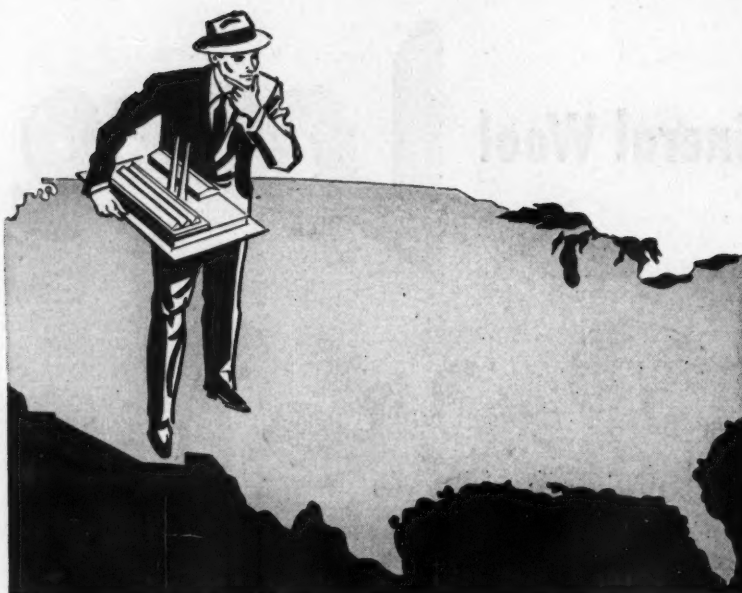
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Jersey, Missouri, Illinois, California and Nevada. Other pharmaceutical companies that have brought such suits are Upjohn, McKesson & Robbins, and Eli Lilly.

Possibly one of the most impressively principled stands against substitution is that of Rexall, which might be expected to be tempted to lean the other way because it manufactures under the Rexall label many drugs that might profitably be substituted for other brands in Rexall drug stores. However, this company goes to the length of having its local druggists send to physicians in the communities a brochure pledging non-indulgence in this "pernicious practice."

While that spirit is rampant, it appears that DCAT's model bill stands a good chance of being adopted in numerous state legislatures next year.

Truststers' New Line

Government antitrusters are developing a new approach to combatting industrial monopolies. Anomalously, they are doing it by negating government-granted monopolies, i.e., patents. Trustbusters are calling the ruling in the General Electric decision (CW, Oct. 17) another landmark in their efforts, comparable in its effect to such early cases as the Standard Oil and sugar monopoly suits, filed back when the Sherman Act was young.

The GE decision ordered the company to dedicate to the public all the company's incandescent lamp patents, to allow royalty-free use of bulb machinery patents, and to grant, at reasonable royalty, licenses under incandescent patents developed in the next five years.

Appeal Ahead? There is still a question as to whether the decision will stand as is. GE has not yet decided if it will appeal. Even government attorneys admit that the Supreme Court has never ruled on whether a company can be ordered to dedicate its patents.

They feel, nonetheless, that they can support the GE ruling as "a logical development from the Hartford-Empire case through National Lead and Alcoa." That's the reasoning they sold the trial judge, and that's how they will argue if an appeal is made.

In 1945, the Supreme Court approved compulsory licensing at reasonable royalty in the Hartford Empire case. In the 1947 National Lead litigation, the Court approved some royalty-free licensing, without saying it would be approved in other cases. In 1950, when the Alcoa case came up for adjudication, the company had

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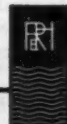
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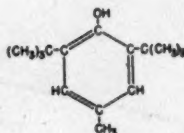
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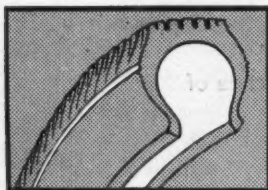
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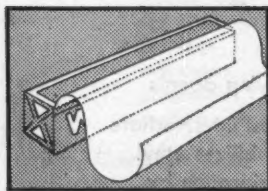
FOR FURTHER INFORMATION, write for your copy of Bulletin C-0-115. It describes in detail the properties, reactions and uses of DBPC.



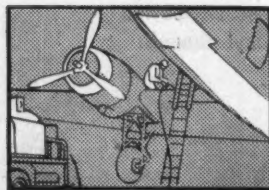
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already arranged to give royalty-free licenses to Reynolds and Kaiser, on condition that they grant back their own patents. This reciprocal arrangement was struck out, leaving Alcoa a royalty-free licensor by court action.

Dedication was thus, in government eyes, a logical next step.

Argument Limit: The gist of the government's argument in the GE case was that there is a monopoly of technology far beyond the boundaries of legitimate exclusive use of patents, since it suppressed research by others than GE.

The moral seems to be this: If you hold the lion's share of patents referring to a single product group, play safe and license to others; if you do license, be sure that your licensing agreement is not so stringent that it impedes technological progress by your competitors.

FOREIGN

Pulp/Japan: Japanese pulp and synthetic fiber producers have set up the Alaska Pulp Co. with capital of \$1,041,700 to develop timber resources in Alaska. With additional funds from American investors and the Japanese Export-Import Bank (a hoped-for \$16 million), the company plans to build facilities capable of turning out 100,000 metric tons of pulp and 43.2 million cu. ft. of lumber annually.

Ammonium Sulfate/Japan: Anticipating orders from Red China in the "not-too-distant future," Japan's Ministry of International Trade and Industry has raised production goals for ammonium sulfate to over 2 million metric tons for the 1953 fiscal year (Apr. '53-Mar. '54). Before the war, Japan's ammonium sulfate plants in Manchuria and Korea were producing at a 720,000-ton clip, hardly a dent in China's annual requirements of 6 million tons.

Tricalcium Phosphate/South Africa: South African entrepreneurs are building a \$450,000 tricalcium phosphate plant at Klipfontein, South Africa (near the government-owned DDT plant) aimed at producing a substitute for bone meal—of which the country has an annual 40,000-ton shortage. Tricalcium phosphate, which has twice the food value of bone meal, will be extracted from domestic fluorine-free magnesium phosphate deposits at a rate of 50,000 tons/year, "at a price lower than that of bone meal."

Rubber/Canada: The Firestone Tire



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and Rubber Co. of Canada has started work on a \$4-million expansion program at its Hamilton, Ont., plant.

Acetic Acid/Australia: Colonial Sugar Refining Co., Ltd., and Distillers Co. Ltd., Great Britain, have just acquired joint control of a \$13,750,000 chemical enterprise at Rhodes, New South Wales, from Colonial Sugar Refining Chemicals Pty. Ltd. Based on the distillation of alcohol from molasses, a whole line of organic chemicals will be turned out, including cellulose acetate (3,000 tons/year), acetic acid, acetaldehyde, plasticizers, solvents, stearates, and fine chemicals such as ascorbic acid. Many of the products and most of the processes are new to Australia, company officials say. Another novel-for-there feature: many of the plants (such as the acetic acid plant and the acetic anhydride works) are not walled in, operate continuously, are electronically controlled.

Cellulose Sausage Casings / Wales: Visking Corp., Chicago, has entered into a joint venture with Sponcel Ltd., England, to form a new company, Viskase Ltd., to manufacture cellulose meat casings for sausage and other meat products in Swansea, Wales. Ready for operation next year and costing over \$1 million, Viskase's plant hopes to find a good potential market in an area where archaic packaging and merchandising still persist.

Terylene/France: Negotiations have been completed between Imperial Chemical Industries Ltd. and the Société Rhodiaceta, Lyons—French manufacturer of acetate rayon and nylon—whereby Rhodiaceta will manufacture and sell Terylene in France under licence from I.C.I.

Calcium Carbide/Philippines: The first loan to be approved under the industrial guarantee and loan fund plan of the U.S. Foreign Operations Administration will be granted to Maria Cristina Chemical Industries, Inc., to manufacture calcium carbide. The \$325,000 loan will be made by the Reconstruction Finance Corp. of the Philippines under guarantee from FOA. Site of the projected plant: at the Maria Cristina hydroelectric dam in Lanao province, Mindanao.

Antidumping/Sweden: The Swedish government has decided to impose an "antidumping" tariff on imported hydrogen peroxide, following com-

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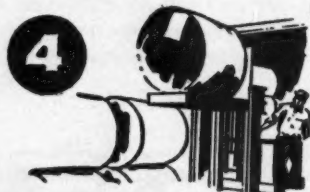
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plaints that several West European countries were dumping in Sweden. The tariff, applicable immediately, will be levied on all hydrogen peroxide offered in Sweden at prices below those charged in the country of origin.

Chemical Cartels/Japan: There's barely a trace today in Japan of the anti-trust measures introduced to Japan during the administration of General of the Army Douglas MacArthur. Revisions in the basic law, now effective, provide that a cartel may be formed:

- In case of a depression when prices of merchandise have dropped below production cost.

- When it is considered necessary for greater mechanization or technical improvement designed to reduce cost.

Further, exporters may enter agreements with producers or distributors, and importers are permitted to make agreements among themselves.

KEY CHANGES . . .

John Boksenbom, to president, American Dyewood, New York Color and Chemical Cos., New York.

Richard Paget, to director, Atlas Powder, Wilmington.

Cecil Humphreys, to manufacturing vice president, Shell Chemical, New York.

John Caskey, to vice president and divisional manager, **George Vila**, to assistant general manager, U.S. Rubber's Naugatuck chemical div.

Llewellyn Howe, to assistant to vice president, **Jack Thomas**, to Doe Run, Ky., plant manager, Mathieson Chemical.

John Eagan, to assistant general plant superintendent, **Hercules Powder**, Gibbstown, N.J.

Byron Kern, to chief engineer, **Robert Byorum**, to assistant chief engineer, Spencer Chemical, Kansas City.

William Waldeck, to director of research and development, Wyandotte Chemicals, Wyandotte, Mich.

G. A. Webb, to assistant to research dept. manager, **Koppers Co.**, Pittsburgh.

Paul Bird, to director of research and development, **Wright Chemical**, Chicago.

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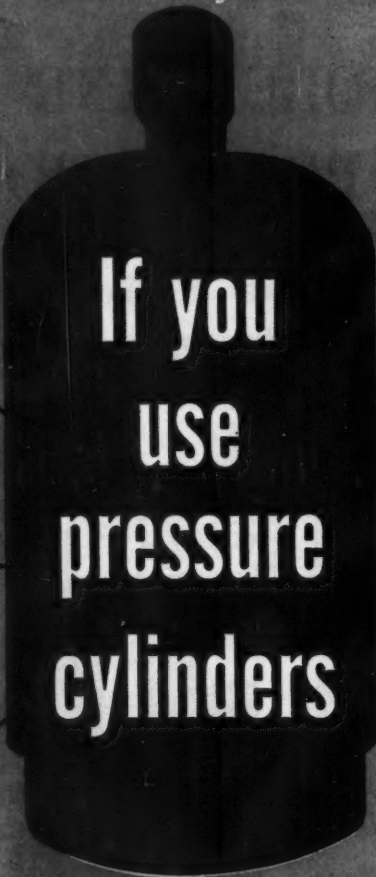
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CYANAMID'S METHYLSTYRENE MENTORS:* Helping hand for necessity.

Benzene is By-passed

A new process for methyl and dimethylstyrenes is being piloted at American Cyanamid Co.'s Stamford, Conn., laboratories.

It by-passes benzene, utilizes acetylene, acetaldehyde toluene and xylenes as starting materials.

Products can replace styrene in several polymer applications, have added potential in the synthesis of new plastics.

Necessity, long-suffering mother of a brood of shortage-conceived chemical processes, has again given birth. The new arrival, American Cyanamid Co.'s method of preparing methyl and dimethylstyrenes from diarylethanes, is industry's second bold attempt at freeing polymer producers from the dislocations of recurring benzene shortages. Its benzene by-passing predecessor: Dow Chemical Corp.'s vinyltoluene synthesis, heart of a new \$10-million vinyltoluene plant (CW, May 30) now under construction at Midland, Mich.

Methylstyrene, regardless of how you look at it, is still vinyltoluene—and vice versa. The difference is the making. Dow's process is based on alkylation of toluene with ethylene, subsequent dehydrogenation of the side chain. American Cyanamid takes a different tack, puts its stock in a

more complicated (but more versatile) synthesis.

First reported in 1945 by a Dominion Tar and Chemical Co. research team, the diarylethane process permits flexibility of both starting materials and finished products. Probed and polished by Cyanamid's James Dixon and Kenneth Saunders, it consists of two distinct operations: synthesis of the diarylethane; cracking to yield a substituted styrene and toluene or xylene.

To make methylestyrene, for example, two moles of toluene are reacted with one mole of acetylene to give a mixture of isomers of 1,1-ditolylethane. The ditolylethane isomeric mixture is then catalytically cracked to yield *o*- and *p*-methylestyrenes and toluene. Acetaldehyde may be used in place of acetylene, but for practical purposes this would entail an additional processing step in the conversion of acetylene to the aldehyde.

In the preparation of dimethyl-

styrenes, xylenes are used instead of toluene; and, to achieve a better balance of dimethylstyrene isomers for polymer purposes, acetaldehyde replaces acetylene. Result is a isomeric mixture of dixylylethanes which is cracked to dimethylstyrenes and xylene.

Added dividend: *m*- and *o*-xylenes, more reactive than *p*- in the formation of dixylylethane, are preferentially taken up from commercial xylene mixtures. Content of *p*-isomer in the residue increases to the point at which commercial crystallization techniques become practical. A new source of *p*-xylene for condensation polymers is the clear implication.

Vital Statistics: Considerably behind Dow, Cyanamid nevertheless has made substantial progress in the direction of methylstyrene manufacture. Vital statistics of the diarylethane process are well defined, dictate a petrochemical-type operation in which toluene (from petroleum sources) would react with acetylene (from natural gas).

Several engineering problems are apparent, but that's hardly unusual. Heat, for example, liberated by the rapid reaction of acetylene, could be one. And conditions for the cracking step are rather limited, pose another. The former could be overcome in large-scale operation by agitation in tank reactors. Solution of the latter isn't as simple, entails the determination of the right combination of dilution, pressure, contact time, and catalyst particle size for a reasonable conversion with a minimum of objectionable by-products.

Final choice, Dixon and Saunders point out, is an economic one, based on heat balances and capital costs for making a substituted styrene of a particular grade. The end-product is purified by distillation, in much the same way as is styrene. Temperature, however, must be kept below 100 C to insure satisfactory performance of polymerization inhibitors.

Take Your Pick: Commercial methylstyrene might be any one of several mixtures of isomers, depending on the process used, choice of catalyst and reaction conditions. A methylstyrene mixture containing 65% meta and 35% para isomers is readily produced (in much the same manner as Dow's process) by dehydrogenation of corresponding ethyltoluenes. This mixture gives a polymer which possesses a softening temperature considerably lower than that of styrene. Somewhat of a drawback in thermoplastic resin applications, comparatively low soft-

* Left to right: H. P. Callahan, chemical engineering group leader; Dixon, Assistant to Director, Stamford Laboratories; and Saunders, research group leader.

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RESEARCH

Cyanamid's diarylethane process, in a nutshell:

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toluene

xylene

Reacts with

acetylene

acetaldehyde

In the presence of sulfuric acid to form

ditolyethanes

dixylyethanes

Which are cracked over clay catalysts, yielding

methylstyrenes
toluene

dimethylstyrenes
xylenes

ening temperature would not stand in the way of surface-coating uses (i.e., in styrenated alkyds).

Dow is aiming the monomer at manufacturers of styrenated oils and alkyds for paint vehicles, believes it can also successfully replace at least a portion of the styrene in synthetic rubber, molding powders, and rubber-reinforcing resins.

The Cyanamid diarylethane process, starting with acetylene and toluene, yields a methylstyrene mixture containing 65% para and 35% ortho isomers. The polymer obtained from this system has a higher heat distortion temperature than styrene, shows promise as a styrene-replacement in thermoplastic moldings, low-pressure laminating resins. Impact strength, however, is at the lower end of the styrene range.

Heat Gain: Dimethylstyrenes present a more complicated picture. The most likely modification of the diarylethane process would produce 3,4-dimethylstyrene and 2,4-dimethylstyrene. The former has a heat distortion temperature about equal to that of styrene; the latter's is much higher. Net result is that a mixture of the two produced by a likely commercial process gives a polymer with a heat distortion temperature of 118 C—about 25 C higher than that of polystyrene.

Impact strengths of polydimethylstyrenes, on the other hand, are lower than those of polystyrene. However, this might not be too serious in thermoplastic molding applications,

could be offset by the greatly increased heat distortion temperature. Modifiers, of course, might be used to boost impact strength.

Right now, Cyanamid is making experimental quantities of methylstyrene at its Stamford, Conn., research laboratories. Plans for manufacturing facilities, according to vice president in charge of research and development Robert Swain, "are still in a very early stage." Dow's plant, though, is due to go on stream by early 1954.

If Cyanamid does push ahead with methylstyrene manufacture, multiple repercussions will be felt in the plastics industry. Cyanamid's output, on top of Dow's, could well give the styrene balance a rude jolt. And, for the first time in its history, Cyanamid will be making overtures to thermoplastics consumers.

Gallic Numerology

Thanks to the propyl ester, three is the magic number in gallic acid food antioxidants. But the Dutch are proving that eight and twelve are also to be reckoned with. Both octyl and dodecyl gallate have just received the Dutch government's approval for inclusion in a number of edible products.

They will move into production shortly at Holland's big Chemische Fabriek Naarden.

New on the commercial scene, the octyl and dodecyl esters are no strangers to researchers on both sides



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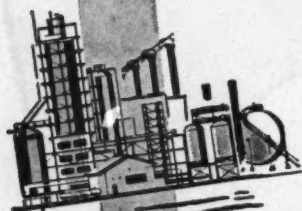
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RESEARCH

of the Atlantic. The Dutch semi-official Central Institute for Food Research (Utrecht) has had the compounds under scrutiny for several years. Here, several chemical and food processing firms have shown more than passing interest in the pair.

Chemo Puro Manufacturing Co. New York, an important producer of propyl gallate, makes the octyl and dodecyl esters for investigation, reports a recent show of interest by manufacturers of edible fats and oils. Heyden Chemical Corp., big in propyl gallate is also eyeing octyl and dodecyl. Thus far, high cost has slowed commercial development of both materials. Propyl gallate is pegged at \$4 a pound; about \$6 a pound would be right for octyl and dodecyl gallate. Difference stems from a tougher process, poorer yields.

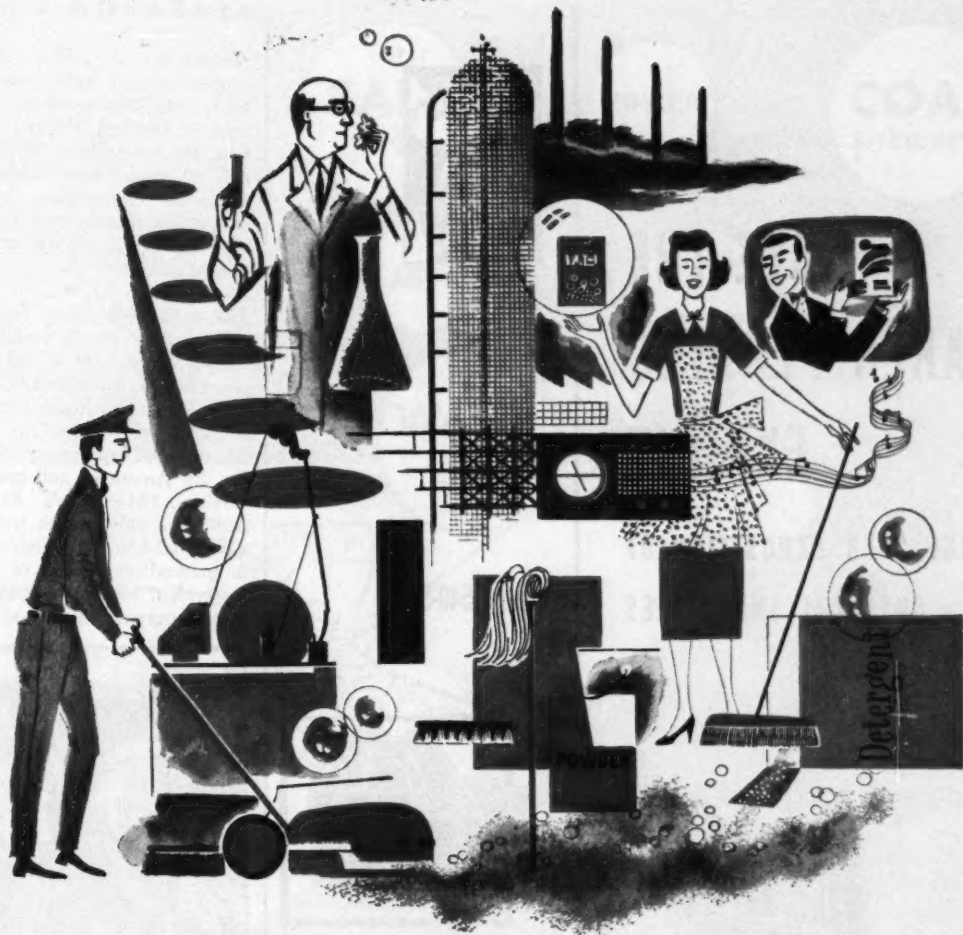
According to the Dutch, however, cost is outweighed by performance and high activity. Less than 0.01% of octyl gallate is reported to prevent rancidity in lard for at least 780 days. Powdered milk, according to claims, keeps for 300 days, chicken fat 780 days, margarine 56. Good results also have been achieved with biscuits, fish oil, salad dressing, dried soups, mutton fat and vegetable oils.

Grams for Tons: And it doesn't take much antioxidant to give a lasting effect with many of these foodstuffs. A ton of animal fat, report Dutch probers, requires only 100 grams; 1 gram suffices for 100 liters of powdered milk.

There's no guarantee that octyl and dodecyl gallates will make the grade in the U. S. If they don't, it won't be for lack of opportunity. Over the years, higher (than propyl) molecular weight gallates have had many chances to prove their mettle in industry and government laboratories.

Drug Probe Housing: A \$1.5-million research building is in the offing for Norwich Pharmacal Co. and subsidiary Eaton Laboratories, Inc. To go up at the company's Norwich, N. Y., headquarters, the new lab will provide 50,000 square feet of working space, accommodate 100 researchers. Due in November, 1954.

They Shall Not Pass: New filters for sub-micron particles are offered by Lovell Chemical Co. (Watertown, Mass.). Lovell claims the new filters are effective as absolute barriers to particles (bacteria, etc.) in the sub-micron range, potentially useful in a spate of industrial applications. A few: screening and assay of new antibiotics; filtration of wines and certain



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dozens of other important products are used today by all major manufacturers to improve detergent effectiveness.

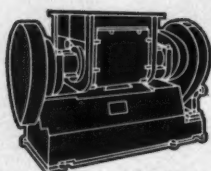
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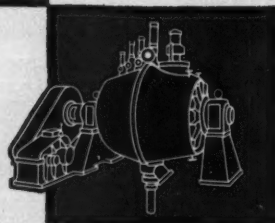
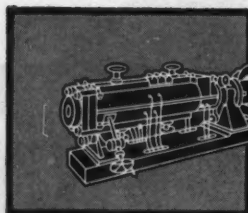


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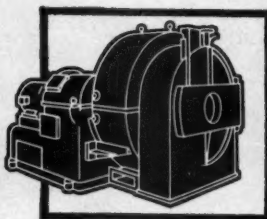
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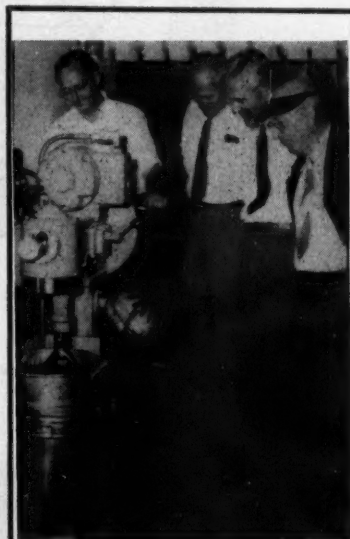


Space 540-544

RESEARCH

pharmaceutical fluids; fermentation process control; collection of sulfuric acid mist; filtration of air in pollution studies. Dubbed Millipore (MF) filters, the new filters have a uniform cell structure that approaches unimolecular dimensions, provide a means for quantitative concentration of particles 0.5 micron or greater in diameter.

Tilling the Soil: More than \$275,000 will be spent Monsanto Chemical Co. during the current school year on its program to aid scientific education. Included in this figure are outlays for scholarships, fellowships, grants and donations of equipment and materials for 58 American colleges and universities. Monsanto's English and Australian subsidiaries will spend an additional \$40,000 on educational aid. A marked expansion of last year's benevolent effort, the 1953-54 Monsanto program embodies an innovation



Cooking Class

NEW laboratory technique for upgrading cottonseed oil and meal is eyed with interest by two industry men on recent visit to U. S. Dept. of Agriculture's Southern Regional Research Laboratory, New Orleans. The pair—Swift and Co's H. S. Mitchell (*second from left*) and Southern Cotton Oil Co.'s P. A. Williams (*third from left*)—are collaborating with SRRL researchers in oilseed investigations. Object of their gaze is experimental alkali cooking operation used on cottonseed meats prior to oil extraction. Doing the explaining: SRRL's William King. (*left*).

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259-A

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RESEARCH

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Foreign Fibers: Word of the latest German developments in textile fiber production and processing is available, for a fee, from Research Information Service (New York). It's found in the firm's latest compilation of abstracted (and translated) German patents and research reports.

Furfural Offshoot: Du Pont chemists have worked out a new synthesis of 4-methyl-5-(β -hydroxyethyl) thiazole—a major fragment of the vitamin B₁ molecule. Springing from a probe of furfural derivatives, the new synthesis starts with 2-methylfuran, proceeds to the thiazole via 5-hydroxy-2-pentanone, 4, 5-dihydro-2-methylfuran and 2, 3-dichlorotetrahydro-2-methylfuran.

Synergist Debut: Rohm and Haas Co. (Philadelphia) is the holder of a U.S. patent (2,613,226) covering the preparation and properties of a new pyrethrin synergist. It's benzyl-*tert*-octylamine, obtained in 77% yield from the reaction of benzyl chloride and *tert*-octylamine.

Quartet: Four new pharmaceutical developments span two continents and three countries:

- Researchers of Eli Lilly & Co. (Indianapolis) have uncovered a new class of analgesics in esters of 4-diakylamino-1, 2-diphenyl-2-butanols.

- Mexican chemists synthesized piperidine ethyldiphenyl acetate, claim (on the basis of animal tests) high nerve-blocking activity for the neophyte.

- Nausea and vomiting are the targets for chlorpromazine, a new Smith, Kline and French product. Suitable for oral or parenteral administration, the drug is 2-chloro-10-(3-dimethylaminopropyl) phenothiazine hydrochloride.

- After 30,000 trials, isopropyl chloride has been recognized in Germany as a fast, smooth-acting anesthetic. It's replacing ethyl chloride and trichloroethylene.

New Oxidizer: Oxidizing properties of a solution of hydrogen peroxide in trifluoroacetic acid are highlighted by new results of research at National Institutes of Health, Bethesda, Md. The reagent converts aniline to nitrobenzene and hydroxylates olefins, both in excellent yield. Oleic acid, for example, is rapidly and quantitatively hydroxylated.

wake up demand with . . .

MIXED ISOPROPANOLAMINE

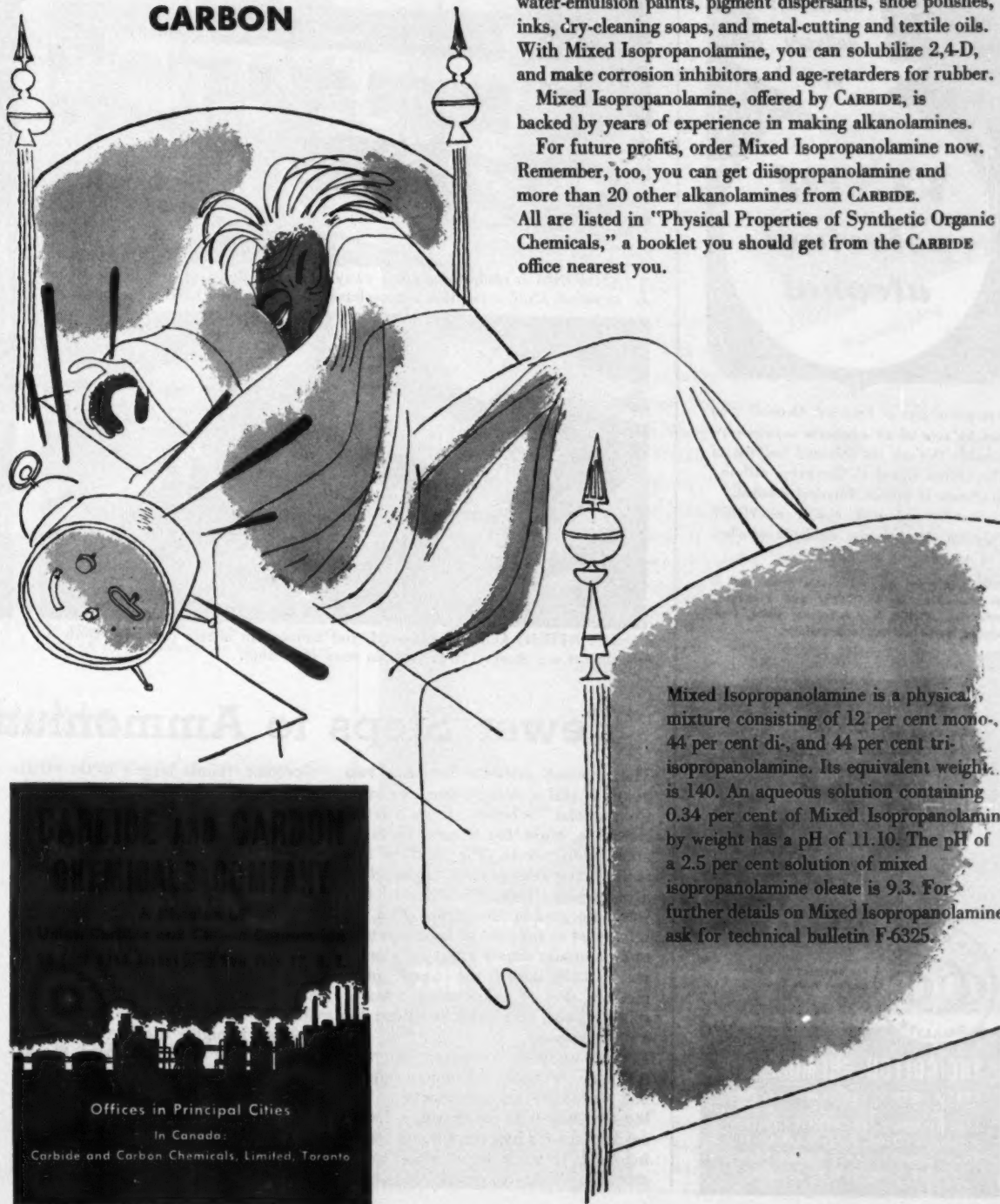
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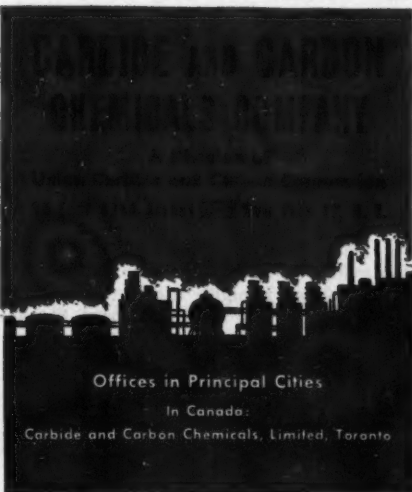
Mixed Isopropanolamine, offered by CARBIDE, is backed by years of experience in making alkanolamines.

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All are listed in "Physical Properties of Synthetic Organic Chemicals," a booklet you should get from the CARBIDE office nearest you.



Mixed Isopropanolamine is a physical mixture consisting of 12 per cent mono-, 44 per cent di-, and 44 per cent tri-isopropanolamine. Its equivalent weight is 140. An aqueous solution containing 0.34 per cent of Mixed Isopropanolamine by weight has a pH of 11.10. The pH of a 2.5 per cent solution of mixed isopropanolamine oleate is 9.3. For further details on Mixed Isopropanolamine, ask for technical bulletin F-6325.



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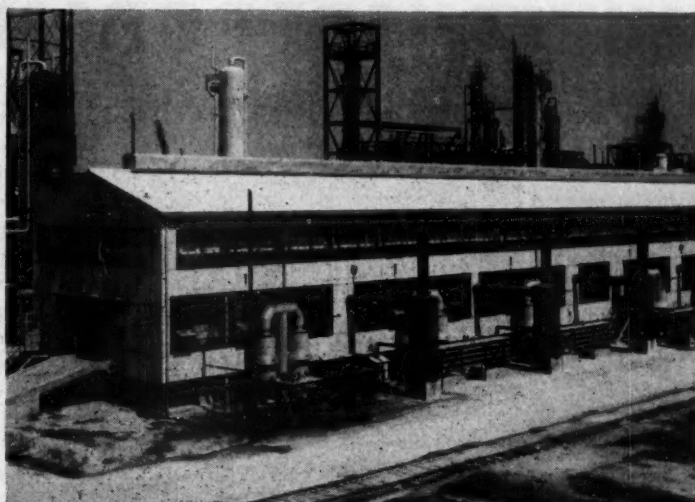
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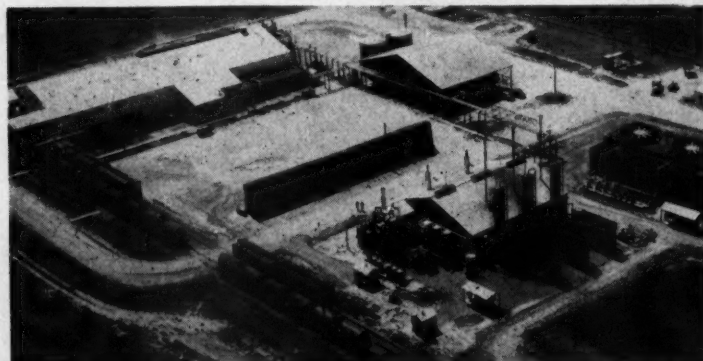
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PRODUCTION . . .



1 AMMONIA is made three miles away in a plant designed by Chemical Construction. Until a pipeline is completed, it's shipped by tank car to make . . .



2 . . . NITRIC ACID (foreground) and ammonium nitrate (far left). Both reactants are charged from tanks in open shed (top).

Fewer Steps to Ammonium

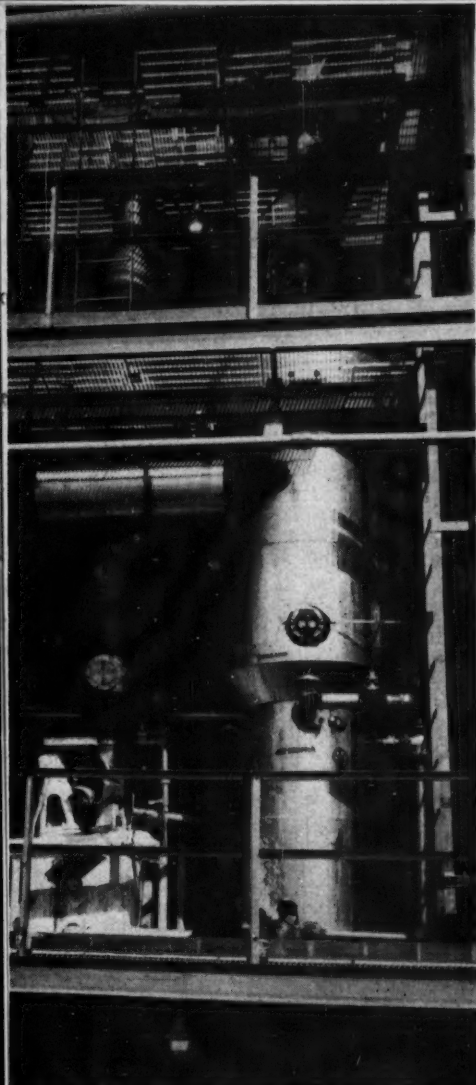
The shortest distance between two points is still a straight line, reasoned Commercial Solvents Corp. as it started a quest for a new route to ammonium nitrate. The result of this straight-line reasoning is apparent in a plant being formally dedicated this week. Located in Sterlington (La.), it's scheduled to turn out at least 200 tons of ammonium nitrate a day by a process that by-passes the usual intermediate step of evaporating a water solution, also eliminates the need for a prilling tower.

For getting solid nitrogen to the crops, it's hard to beat ammonium nitrate and its 33.5% nitrogen content. The big difficulty with using it as a fertilizer is that it's hygroscopic, on standing tends to set in large cakes "tombstones"). This drawback has been

overcome, thanks largely to the efforts of engineers of the TVA and Consolidated Mining and Smelting Co.* Commercial Solvents, however, felt that conventional methods for making ammonium nitrate left room for improvement. Here's why:

Normally, when you want to make ammonium nitrate, you react ammonia and nitric acid to get a solution of ammonium nitrate in water. Then you have to drive the water off before prilling, crystallizing or graining. But the reaction is highly exothermic—so why not, queried CSC's Leonard Stengel

* TVA engineers found that the tendency of ammonium nitrate crystal to cake could be reduced by coating the particles with paraffin, rosin or petrolatum, then mixing with kaolin clay or diatomaceous earth. Cominco engineers added the "prilling" refinement, in which the nitrate is pelletized by a method similar to the one used in the manufacture of lead shot.



3 CLUE to process is the stainless-steel reactor. Heat given off in reaction drives off the water.

Nitrate

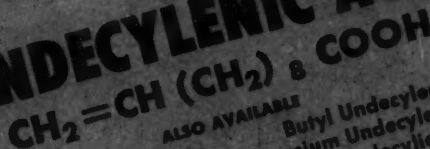
(who started up the firm's first synthetic methanol plant in Peoria back in 1926), react ammonia and nitric acid, then use the heat given off to evaporate the water in the same vessel?

Hazardous Answer: The obvious answer to Stengel's question was that it couldn't be done. Reasons: inherent hazards involved in handling ammonium nitrate at the required temperatures. Stengel found not only that it could be done (U. S. P. 2,568,901) but that it could be done safely on a large scale. And touring the plant last week, the CW camera saw how:

Ammonia is produced three miles away in a CSC plant designed by Chemical Construction. Presently it's being shipped in by tanker but eventually it will be moved through a pipeline. Part of it is used to make

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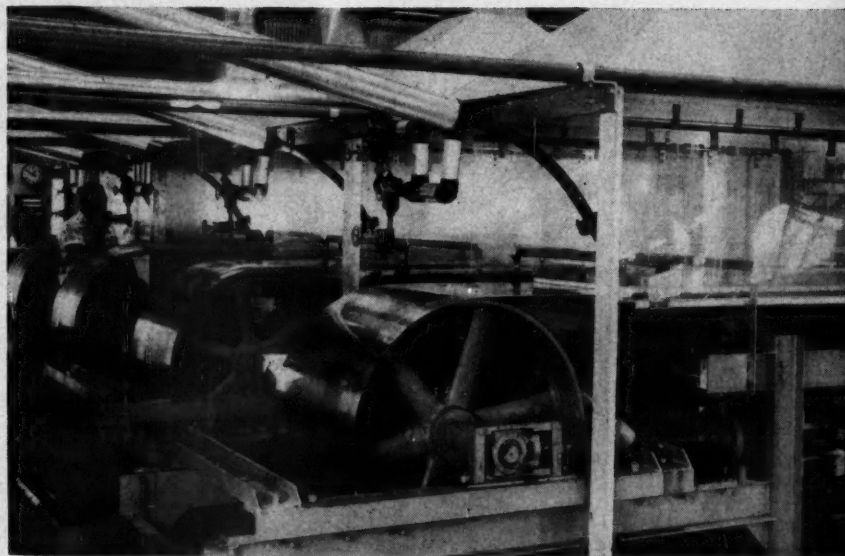
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PRODUCTION



4 FROM REACTOR, molten ammonium nitrate is deposited on Sandvik belt.

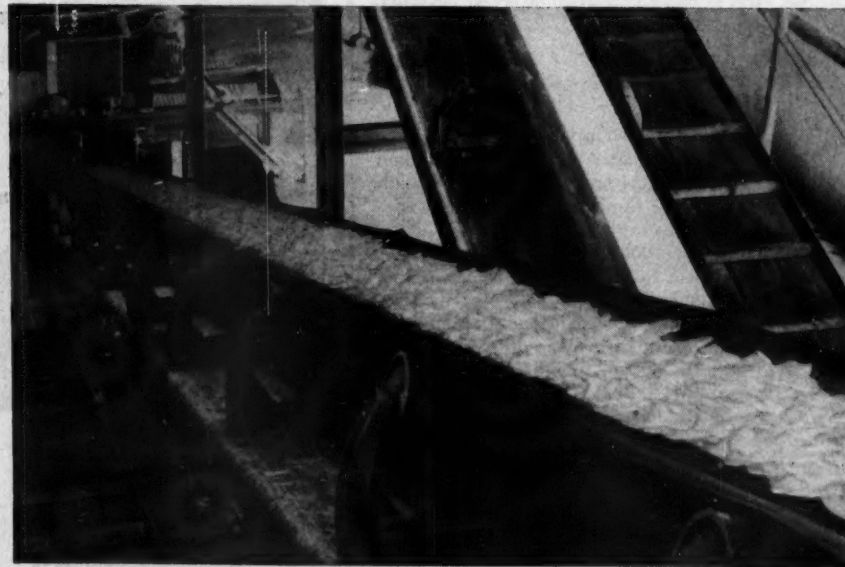
nitric acid in a plant designed by Chemical and Industrial Corp., the rest goes for production of the nitrate.

Both the ammonia and nitric acid are sent to charge tanks, thence to a stainless-steel reactor packed with Berle saddles. Temperature in the reactor is about 400 F.; the product leaving it is a molten material running approximately 99.3% ammonium nitrate.

From the reactor, the nitrate is deposited on a Sandvik belt. It's then

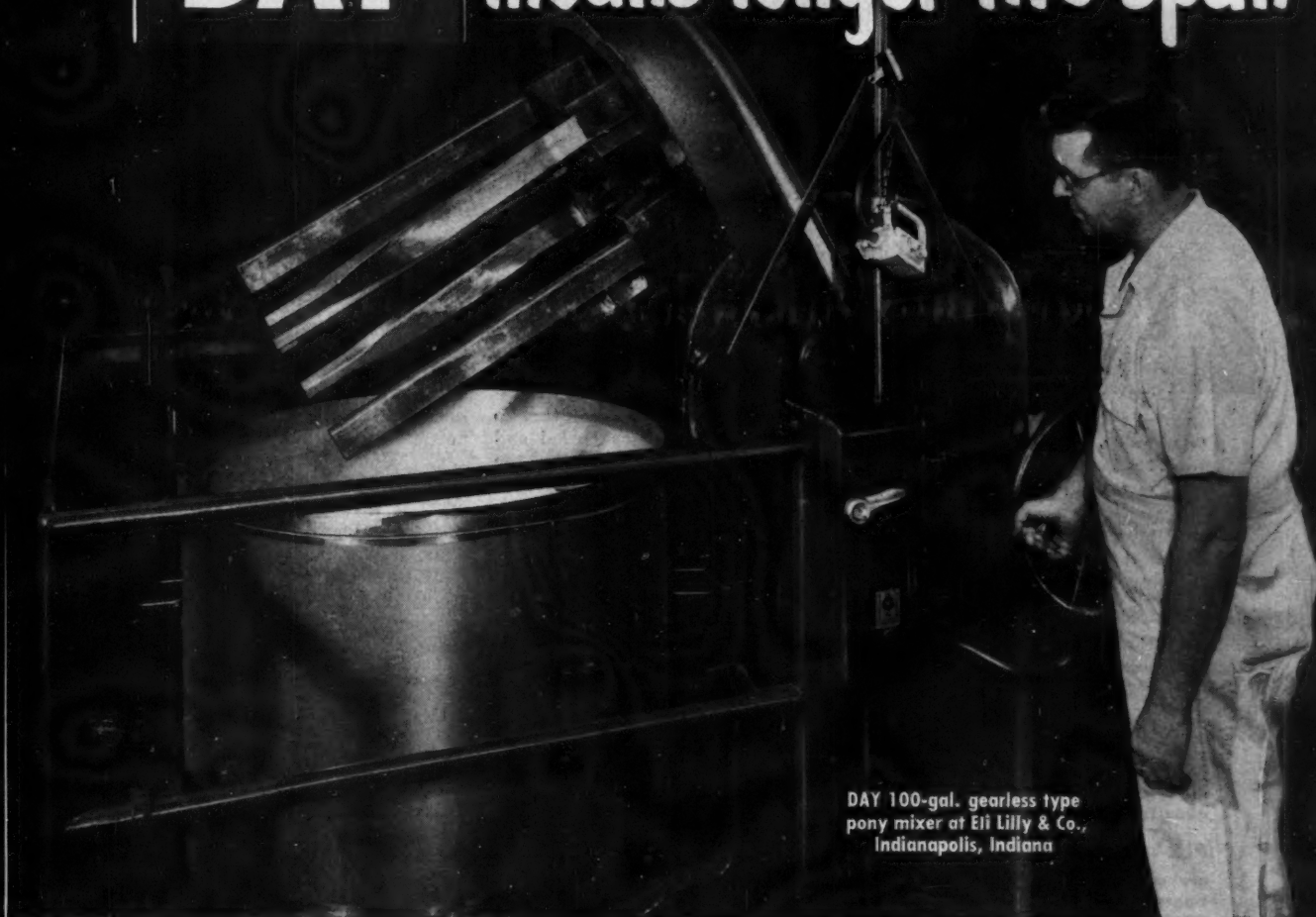


5 AT END of the belt, it's broken off into chunks and dropped onto . . .



6 CONVEYOR BELT. Then it's broken into smaller pieces in a hammermill.

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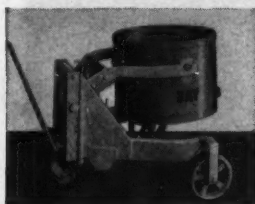


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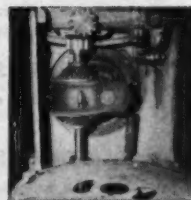
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are manufactured from long-life resin-bonded glass fiber.

PLA-TANK STACKS

are resistant to a wide variety of fumes and temperatures. Not affected by extremes in weather.

PLA-TANK STACKS

are light in weight, relieve danger of collapsing and sagging roofs; need less support. Save on handling, freight and shipping charges.

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are easy to install, require less rigging.

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are the answer to your needs for many fume exhaust jobs now on your drawing boards or for replacements in existing systems.

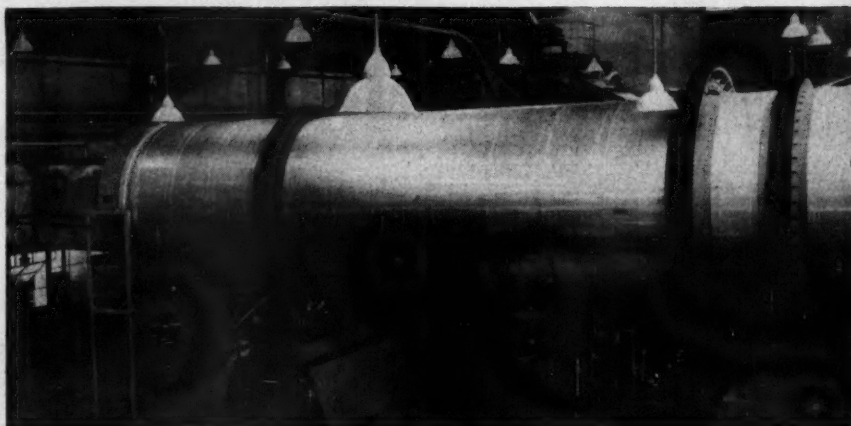
Write for free data file sheet

P-11



64 Waltham Avenue, Springfield 9, Mass.

PRODUCTION.



7 IT THEN GOES THROUGH A cooler and is screened. Oversize from screen is sent back to mill, undersize to the reactor.

broken up into small pieces, transferred to a belt conveyor and sent to a hammermill. Next, it's cooled and screened; oversize is returned to the hammermill, undersize is recycled to the reactor. After the screening, the nitrate is coated with a diatomaceous earth and bagged.

Final product is larger than comparable material made by prilling. But, points out CSC, it's free-flowing and flow can be easily controlled in feed-

ing it to the chutes of the fertilizer applicator. And the size particles makes no difference to the soil or crops.

CSC figures the new plant has some clearcut advantages over conventional ones. It says the capital investment was less, foresees lower operating costs. It was put up in a relatively short time and the firm figures the process is flexible enough to facilitate tailoring the product to customers' needs.



8 FINALLY, the ammonium nitrate is coated with diatomaceous earth and bagged. The final pieces are larger than prilled material but are free-flowing.



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**now available —
all sizes ...
all tempers**

Users of fine wire can now obtain prompt delivery of Crucible stainless steel wire ... in all diameters ... in all tempers from full hard to dead soft. And Crucible's fine wire comes in all standard grades — with a bright surface or a variety of metallic and nonmetallic finishes tailored to meet your specific application.

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No matter what type of wire you use — whether it be cold heading wire, weaving wire, spring wire, needle wire, screen wire, cable wire, or a host of other types — our new mill is equipped to serve you. For prompt delivery of quality stainless wire, call your nearest Crucible warehouse.

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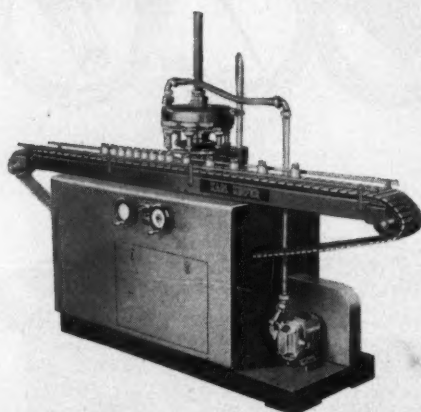
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October 24, 1953 • Chemical Week

• WHAT A "SHARP" FILLING MACHINE •



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VARI-VISCO**

FOR FACIAL CREAM —
PAINT — OIL — GREASE
AND THIN LIQUIDS, TOO.

Known everywhere for extremely neat, accurate results! Has the ability to make time and make money.

Now equipped with an automatic feed and discharge conveyor. The trays lift for a solid bottom-up fill of heavy material. Also handles small neck containers. All done by volumetric measure.

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BUFFALO 3, NEW YORK

EQUIPMENT. . . .

Parade of Pumps: The problem of efficiently moving fluids is still one of the biggest ones faced by chemical engineers. This week they have several new tools to help them with their problem:

- Peerless Pump Division of Food Machinery and Chemical Corp. (Los Angeles) is bringing out a new pump that has no stuffing box, is said to be completely leakproof. As Peerless sees it, the big outlet for the pump will be in handling dry chlorine. This is how it reasons: it's next to impossible to handle dry chlorine in conventional pumps, so in the past it has been done by using dry, compressed air. But this, says Peerless, is a tedious, expensive procedure. Its new pump, it claims, gives all the advantages of centrifugal pumping, but is not overly expensive in first cost and is more economical to operate than a compressed air system.

Moving parts of the pump are immersed in the liquid being pumped; the liquid is sealed from air contact by a nonmagnetic stainless steel diaphragm in the air gap between the rotor and stator of a conventional motor. It can be mounted, through manholes in storage tanks, for moving chlorine to tanks, tank cars or cylinders.

This marks the second move on the same market for Peerless. Last year (CW, May 24, '52), it brought out a magnetic pump which, it reported, had been used successfully to handle dry chlorine as well as ammonia, organic acids and water. Several of the new pumps, it says, are now being used by a leading chlorine manufacturer.

- The Eclipse Fuel Engineering Co. (Rockford, Ill.) has just brought out a belt-drive pump that will deliver heavy fuel oils at operating pressures up to 100 psi. It says the pump can be used for severe continuous pumping of heavy fuel oil without cavitation, pounding or churning.

- The Allan-Sherman-Hoff Pump Co. is now marketing its Centriseal pump for pumping abrasive or corrosive substances without dilution. It can substitute for the firm's Hydroseal pump wherever sealing water is not available.

- Precision Machine Co. (Somerville, Mass.) is introducing Model S, a positive-displacement diaphragm pump designed for accurate moving of small amounts of chemical solutions. It is suggested, for example, for handling chemicals used in water treating. All parts coming into contact with the liquid are either of a chemically resistant plastic or synthetic rub-



CSC makes more METHANOL

With the opening this month of the valves of the newly completed \$20 million facilities at Sterlington, Louisiana, Commercial Solvents Corporation becomes one of the world's largest producers of methanol, for sale to meet the growing needs of expanding American Industry. For steady, dependable, large-volume supply of methanol, CSC is your logical source. High-quality CSC methanol, produced from natural gas, is being supplied at a minimum purity of 99.85% in tanker, barge, tank car, tank truck and drums to all parts of the United States from conveniently located bulk and distribution points. For further information contact the Industrial Chemicals Dept., Commercial Solvents Corporation, 260 Madison Ave., New York, N. Y.

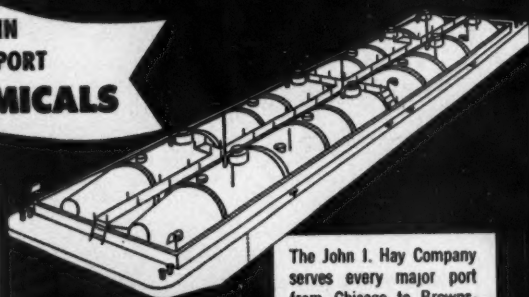
INDUSTRIAL CHEMICALS DEPARTMENT

CSC **COMMERCIAL SOLVENTS CORPORATION**

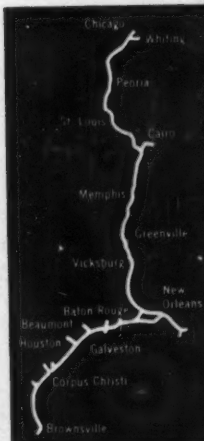
ALDEHYDES • ALCOHOLS • ESTERS • AMINES • AMINOALCOHOLS
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LIQUID DRY BULK PACKAGE



The John I. Hay Company serves every major port from Chicago to Brownsville with specialized bulk chemical and general package freight equipment.



JOHN I. HAY COMPANY
323 E. Michigan Ave., Chicago 4, Ill.



PRODUCTION

ber. It's built for a long life, says Precision Machine, but maintenance in the field, when necessary, is easy.

Packaged Rectifier: American Rectifier Corp. (New York City) is now pushing its standard unit rectifiers ranging from 3kw. to 50kw. As the firm sees it, the standard units eliminate delays inherent in the delivery of custom-built models, should gain favor with anyone working dc equipment on ac sources in that range.

New Mixer: The Rapids Machinery Co. (Marion, Iowa) is adding another industrial model to its line of Marion mixers. The new model is aimed at handling wet or dry chemicals, is available in ton and ton-and-a-half sizes. A 2 ton model, for handling dry material only, is also available.

Plastic Pipe: You can add Carlon Products Corp. (Cleveland) to the growing list of fabricators of rigid polyvinylchloride pipe. Carlon has been a significant factor in the plastic pipe field through its activities in polyethylene pipe.

Changes Made: Moves made last week by manufacturers that supply equipment for the process industries:

- Pfaudler International American Corp., a wholly owned subsidiary of the Pfaudler Co. (Rochester, N. Y.) has been formed. It will handle all Pfaudler's export business to Central and South America, Canada and the West Indies.

- Knapp Mills Inc. has formed Knapp Mills de Mexico, S.A. to be headquartered in Mexico City. Mexico, says Knapp Mills, now produces 15% of the world's lead but has to export it to other countries, where it is fabricated into shapes. Mexico then buys it back. Knapp has made a contract with Valezzi, Sucs., S.A., hopes to market know-how to the latter and get exclusive distribution rights to its products in Mexico and the U.S.

- Reliance Electric and Engineering Co. (Cleveland) has opened a new office in Duluth, Minn.

- North American Philips Co., Inc. (Mount Vernon, N. Y.) has appointed the Airframe Supply Co. (Akron, O.) as sales agent for industrial radiographic x-ray equipment in all states east of the Mississippi.

- The S. Morgan Smith Co. has merged its wholly owned subsidiary, R-S Products Corp. (Philadelphia) into its organization, will continue to manufacture the R-S line of valves at its Philadelphia plant.

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ELECTRO-CHEMICAL COMPANY

PHOSPHORUS (Yellow or White)

PHOSPHORUS OXYCHLORIDE

PHOSPHORUS TRICHLORIDE

PHOSPHORUS PENTACHLORIDE

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PHOSPHORUS SESQUISULPHIDE

AMORPHOUS PHOSPHORUS

PHOSPHORIC ANHYDRIDE

PHOSPHORIC ACID

PHOSPHOROUS ACID

HYPOPHOSPHOROUS ACID

ALKYL ACID PHOSPHATES
(Alkyl Phosphoric Acids)

SODIUM CHLORATE

POTASSIUM CHLORATE

POTASSIUM PERCHLORATE

HYPOPHOSPHITES

OXALIC ACID

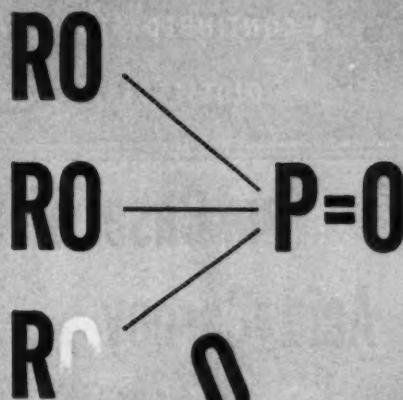
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Dialkyl Alkylphosphonates are similar in many respects to trialkyl phosphates, but a significant structural difference occurs by attaching one alkyl radical directly to the phosphorus atom by a carbon-phosphorus bond. Three of the series developed by Virginia-Carolina Chemical Corporation are now available in substantial pilot plant quantities:

DIETHYL ETHYLPHOSPHONATE
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These stable organic compounds have important advantages over the phosphates such as higher flash points, lower toxicity, greater thermal stability and excellent low temperature properties, indicating these possible fields of usage:

Antifoaming Agents • Oil Additives • Plasticizers and Softeners
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Manufacture of Phosphonates • Intermediates for Organic Chemicals

A brochure on V-C Dialkyl Alkylphosphonates and samples are available without charge. Simply request these on your company letterhead.

V-C Organophosphorus Compounds and Intermediates in Commercial Production

DIALKYL PHOSPHITES—methyl-, ethyl-, butyl-, 2-ethylhexyl-
TRIALKYL PHOSPHITES—ethyl-, butyl-, 2-propyl-, hexyl-,
 iso-octyl-, 2-ethylhexyl-
TRIBUTYL PHOSPHATE • TETRAETHYL PYROPHOSPHATE
PHOSPHORIC ANHYDRIDE • PHOSPHORUS OXYCHLORIDE
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V-C has prepared and studied several hundred other organophosphorus compounds. Some of these may be of interest to you.

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 Chemicals Division: 401 East Main Street, Richmond 8, Virginia



A CONTINUED STORY BY ONE OF AMERICA'S
OLDEST GLASS MANUFACTURERS

The Case of the Acid Carboy . . .

by GAYNER



One of the most important steps in the manufacture of glass carboys is the packing and preparation for safe shipment. And that's where Paul Counsellor comes into the Gayner Glass picture.

For seventeen years, Paul has served in a supervisory capacity, following in his father Dave's footsteps and developing into one of the most versatile and efficient supervisors on the Gayner staff of glass-making experts.

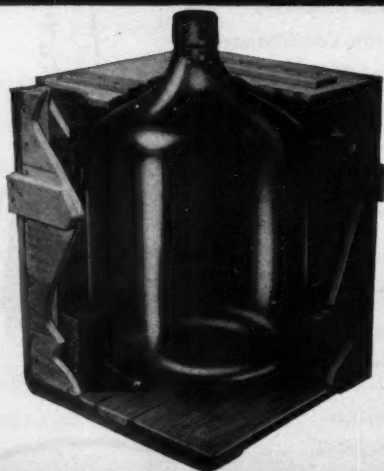
The illustration shows Paul checking the packing of 13-gallon MCA standard glass carboys. Performance to exact standards and close inspection of box, cork and bottle assure delivery of perfect packages meeting I.C.C. requirements. This unusual care in packing combines with the following eight "time-proven" points to make Gayner Glass Carboys the favorite acid and chemical carrier of the process industries for almost 60 years.

TIME-PROVEN CARBOY POINTS

- 1—Gayner glass is fully annealed. Maximum shock-resistance for safety.
- 2—Uniform, heavy walls. Strong, durable, greatest serviceability.
- 3—Easy to clean because it's GLASS. Re-usable for same or different liquids.
- 4—Resistant to chemical attack. No pores or pits to absorb water or chemicals.
- 5—Bottle held firmly by cork wedges. All corners of box securely cushioned.
- 6—Light in weight—low return costs.
- 7—Box is clear, sturdy, seasoned white pine. Bottle easy to install, convenient to handle and store.
- 8—Approved by Bureau of Explosives. MCA Standard 13-gallon carboy bottles.

Write today for illustrated brochure on carboys, bottles, boxes and cartons.

**IMMEDIATE DELIVERY ON ALL TYPES
FROM 1 LB. BOTTLES TO 13-GALLON CARBOYS**



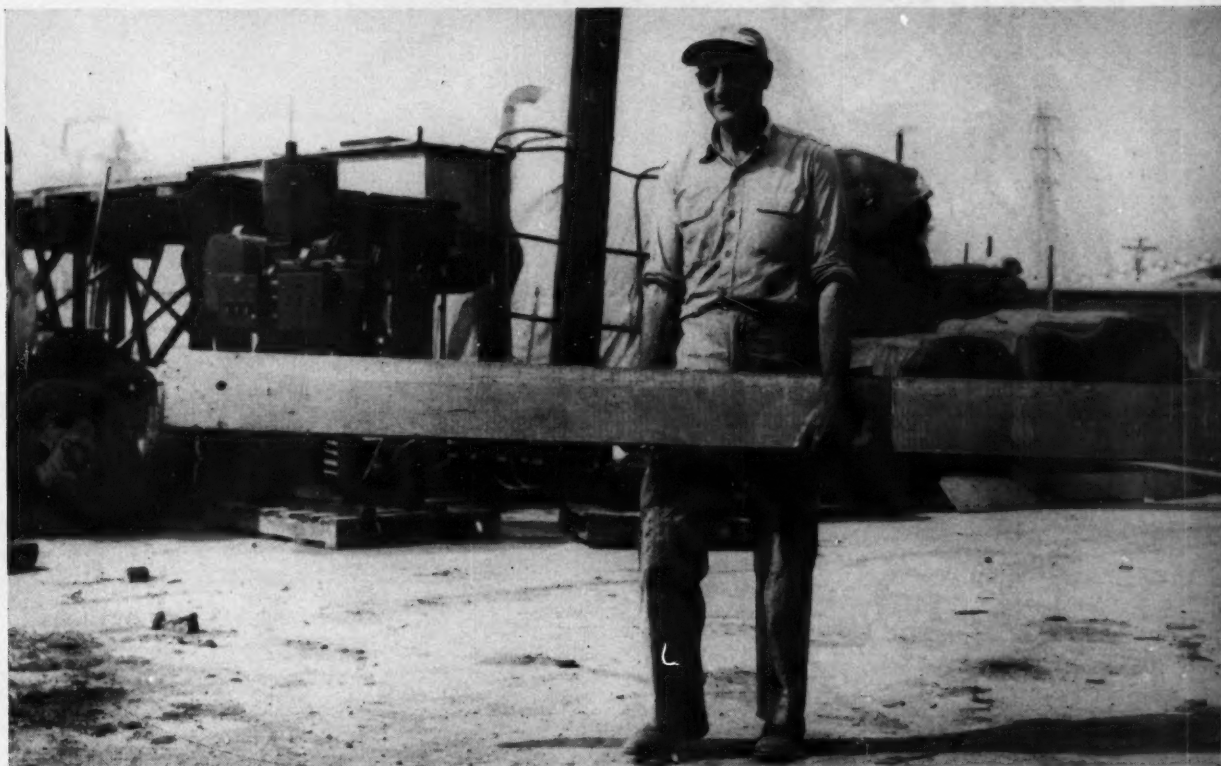
GAYNER
SALEM, NEW JERSEY

MANUFACTURERS OF FINE GLASS CONTAINERS



GLASS WORKS
FOUNDED IN 1874

FOR CHEMICALS, DRUGS, OILS, WINES, JUICES . .



FACTOTUM CLOUGH: Common labor is all in a day's work for the president.

Expansion By Construction

To the average company executive, the expression "do-it-yourself" probably conjures up a picture of puttering around the house or garden. And when his company has reached the million-dollar class, its president is not likely to be found out in the company yard, doing common labor.

Not so William Clough. If his firm, Western Chemical Co., has a motto, it might well be "do it yourself." For just about everything that Clough and his associates have done to expand operations has literally been on that basis.

The only distributor of chemicals in the state of Arizona, Western Chemical has been built almost entirely with company labor.

From All Walks: The total number of employees in Western Chemical's Arizona and California companies averages 30 throughout the year. Only one, Clough's son, Fred, is a graduate chemist. Clough himself was originally a stockman, got interested in the oxychloride cement business in 1922, and claims to have popped the

first perlite on an experimental basis in 1938 in Los Angeles (using rented quarters).

Vice-President Gerrald Johns has been with Clough from the beginning; before joining in the Western Chemical operation, Johns was an assistant manager in a 5 & 10¢ store.

Likewise, Vice-President Eldon Mitchel, joining the company in 1940, arrived with nonchemical experience. His background: accounting.

Despite this lack of technical training, the development of the organization's facilities over the past 16 years is a record of self-construction expansions.

The Man: Certainly William Clough is the only chemical distributor company president whose job consists mainly in supervising construction.

Almost any day of the week he can be found somewhere on the plant grounds, garbed in common work clothes. If, for instance, one of the chemical mixers needs a new belt, Clough will be on the spot to make sure it's properly installed.

Or, perhaps a piece of new equipment is to be set into place. You can be sure that Clough will be guiding the operation with his own hands.

Piece by Piece: Take the building of the Los Angeles warehouse and office as an example of his system.

Clough had founded Western Chemical Co. in Phoenix, Ariz., back in Sept. '37. As originally planned, Western Chemical's operations were to include warehouse and office space in Los Angeles. Reason: about 80% of the company's tonnage is brought to Arizona from Los Angeles and other central locations.

But World War II limitations on new construction prevented the firm from proceeding with its original Los Angeles expansion. Rather than defer the project, Clough bought an old mine building, moved it piece by piece from Ransburgh, Calif., to Los Angeles in company trucks returning empty from Phoenix.

With this material for the walls and siding on hand, Clough was able to obtain a permit for the necessary



On Our 155th Anniversary

we express to our friends and
associates throughout the industry

.. our sincere gratitude to the past

.. our positive hope for the future

.. and our deep and abiding faith
in the final ability of mankind
to meet with courage, under-
standing and realism the one
immortal certainty of life ...
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• PERFUME BASES • FLAVOR BASES • VANILLA



FROM HANGAR: Recovered trusses . . .



TO WAREHOUSE: Homemade blocks, too.

STORY BEGINS ON PAGE 61

roofing materials. He then supervised the construction himself, contracting only for the plumbing and initial wiring. Result: the 60x66 ft., 2-story building cost a total of \$16,000, saving the company an estimated \$16,000.

Sewers and Spurs: After the war, Clough bought a surplus building from the naval shipyard at Terminal Island (near Los Angeles) for \$22,000, used it for a 60x120-ft., 2-story addition to the original warehouse, saved about \$22,000. Most of the actual construction, including a 600-ft. sewer, was accomplished by Clough and his crew.

And in 1949, after 18 months' work, the Western Chemical gang completed a new warehouse and office

NEW EQUIPMENT: He installs it.



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serve every industry

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Manufacturers of textiles, detergents, paper, cosmetics, industrial chemicals, agricultural chemicals, plastics and scores of other products have found an IGE PON or several IGE PONS essential for their operations.

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Specify these **CUSTOM BUILT Shipping Sacks** for packing and shipping your crushed, powdered, and granulated chemicals!

They are made in various types, sizes, and strengths—printed or plain. They are sift-proof, dust-proof, and water-resistant.

Raymond will be glad to assist in selecting the perfect types for your individual requirements.

THE RAYMOND BAG COMPANY
Middletown, O.



OLD EQUIPMENT: He fixes it.

STORY BEGINS ON PAGE 61

building in Arizona. When Clough found his operations in Phoenix crowding him for space, he bid on a surplus hangar at Thunderbird Field, got it for \$6,500.

The trusses from the hangar were used to support the roof of the 30,000-sq.-ft. warehouse. Total cost of warehouse and office was \$106,000, including sprinkler system, block wall (Clough made his own blocks), a 600-lb./sq.-ft. second floor, complete cooling system, and all interior work.

Then, needing a 530-ft. spur track, Clough et al bought second-hand tracks and ties, laid the spur themselves for a total cost of \$1,200 as

against the railroad estimate of \$5,000. So successful was the spur laying that WC is planning to lay another in Los Angeles.

Pickup to Fleet: When Clough asked Gerald Johns to team up with him back in 1937, their total company assets consisted of less than \$3,000 in inventory and working capital and one used pickup truck. Liabilities were \$3,600 for inventory and accounts payable. In its first month of operation, Western Chemical grossed a mere \$2,000; most of this came from laundry and dry-cleaning chemical sales.

The company now counts up \$900,-



JOHNS: Front man, desk man, truck driver, and vice-president . . . sells service.

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can offer you:

COLOR—so light that new color standards were made necessary.

ECONOMY—Low in first cost and soluble in low-cost petroleum solvents.

VARIETY—Standard and special grades in melting points from 10° C to 125° C.

NEUTRALITY—Low acid number—less than 4—unsaponifiable.

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PERMANENCE—Stable and non-yellowing—unaffected by alkalis and salts.

LOW COST—made by patented process that permits low selling price.

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—for complete data, specifications and samples. Please describe intended use in inquiry.

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NO METAL
NO BREAKAGE



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★
ICC-43A SPEC.
Tare Weight—34 lbs.
13 gallon capacity

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Natural, Neoprene,
Butyl or other Synthetic
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DISTRIBUTION

000 in assets; its wholly owned brother company, Western Chemical & Manufacturing, in Los Angeles, is worth an additional \$400,000. The original used pickup truck has now given way to a fleet of two large diesels, a tanker and four stake trucks.

And this year the two companies should gross over \$1½ million sales; the laundry and dry-cleaning line is augmented by traffic in industrial chemicals, industrial cleaning compounds, magnesite compounds and nonmetallics (asbestos, mica, mica schist).

The asbestos operations were approached in typical Western Chemical fashion. In 1951 it bought an Arizona asbestos mine to give the trucks something to haul back from Arizona to Los Angeles. In order to process the fiber, the company is now adding long-fiber processing and grading screens to an already installed short-fiber mill in a new 10,000-sq.-ft. building in Los Angeles. Clough, of course, erected the building himself at a cost of \$40,000 plus \$75,000 in machinery.

Secret Service: WC's "do-it-yourself" idea pervades farther than building. The company's own fleet of trucks and its Los Angeles warehouse are other examples of WC philosophy. Behind it all is the belief that a company that can do its own work will always be in a better position to keep growing, and more particularly, to render good service.

Service is a thought especially close to the heart of Vice-President Johns. Johns still drives a truck now and then, fills in as a salesman, sits at the order desk as needed. "But," says he, "it isn't just the construction supervising or truck driving that builds up the company."

"And you don't always have to be low man in the price book, either. Service, particularly in the somewhat isolated areas of Arizona, often sells more goods than low price."

Meanwhile, prosperity hasn't changed the company's "do-it-yourself" construction slogan. Next project for Clough: a 10,000-sq.-ft. addition to the warehouse facilities in Phoenix. Part of the job calls for the exacting task of rubber-lining several large acid storage tanks.

And it's a better-than-even bet that Clough himself will be lining the tanks.

For Paints: Two companies offer booklets on calcium carbonates:

- *Purecal in Paints* may be obtained by writing Wyandotte Chemicals Corp., Dept. N. R., Wyandotte, Mich.

- Witcarb V and P are detailed in current *Technical Service Report P-18* of Witco Chemical Co., 260 Madison Ave., New York 16.

- **Alkyl Benzene:** Procedures for obtaining surface active products is the subject of Monsanto's *Technical Bulletin No. P-148*. May be obtained from Phosphate Division, Monsanto Chemical Co., St. Louis 4, Mo.

- **Ketone "Family":** Subject of a booklet (F-4767) describing 14 commercially available ketones. Featured are specification test methods used by the manufacturer. Available from Carbide and Carbon Chemicals Co., 30 East 42nd St., New York 17.

- **Coating Resins:** Rohm & Haas Co. offers a new 135-page book on the subject. Company invites inquiries on letterhead. Address: Philadelphia 5.

- **Film Laminate:** New price schedule on Cellothene, Cheslem Corp.'s polyethylene/cellophane laminate, has been issued by the company. Address: 284 Nepperhan Ave., Yonkers 2, N. Y.

- **New Plant:** Du Pont's Grasselli Chemical Dept. will build a \$400,000 acid bottling and storage plant at Bedford, a Cleveland suburb.

- **Warehouses:** Carbide and Carbon Chemicals now has a distribution warehouse in South Miami, Fla.

- **Merchants Chemical Co.** (New York) is opening a new warehouse in Louisville, Ky.

- **Silicone Sales:** General Electric Co. is establishing two new branches for silicone products. Albert Baldock will manage the Eastern District, with offices at 570 Lexington Ave., New York City. Constantine Chase, Midwestern manager, will headquarter at 1105 Chester Ave., Cleveland, O.

- **PMAC's:** A series of polymethoxy acetals of varying viscosities is now offered in semicommercial quantities. For technical information, price lists and samples write to: Commercial Development Dept., General Aniline & Film Corp., 435 Hudson St., New York 14, N.Y.

- **Drum Liner:** A double-wall polyethylene liner for fiber or steel drums is available in 15-, 30- and 55-gal. sizes. Maker claims increased strength (over single wall) provides added protection. Offered by Mehl Mfg. Co., division Sydney-Thomas Corp., Cincinnati 2, O.



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These units are essential parts of a revolutionary design, the features of which Socony-Vacuum has recently adapted to small refineries, employing the same general principles.

Thus does Industry continue to depend on Graver for superior craftsmanship in steel plate fabrication.

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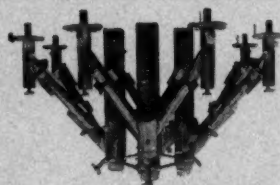
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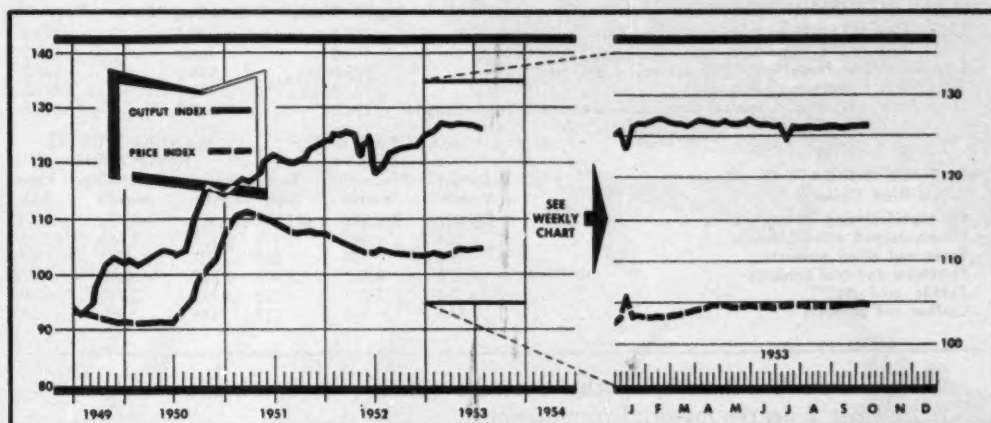


Lift Pot



Primary Air Nozzle

MARKETS



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

Invariably price changes beget price changes in chemicals as well as in most other markets. But while competition is still the prime factor, rising manufacturing costs continue to be a potent price leveling agent.

Example of the latter in action is the recent rash of higher drum price differentials for many plasticizers as producers tried to cover steadily rising costs of drum packaging. All lacquer material makers, however, have not as yet fallen in line with the earlier price hikes—though it's a cinch they soon will.

For instance, not all dibutyl phthalate users are paying the higher l.c.l. 37¢/lb. price currently being quoted by a few makers. Nor have all dioctyl adipate producers met the recent advance in differentials, which began a few weeks ago. A noticeable perk in buying interest, however, is expected to establish a uniform price.

On the other hand, the competitive urge alone is behind Du Pont's nudging its isocyanate prices to lower levels. Monsanto—only other principal producer—late last week posted price cuts on five different grades. Within hours, Du Pont was notifying customers it would meet the reductions.

Both, of course, have recently sunk millions into isocyanate facilities (CW, July 4), feel certain of a future 5-10 million-lbs. market in adhesives, foamed-in-place resins, other outlets.

What effect isocyanate output from at least two other very interested potential producers will have on prices is still speculative, but chances are competition then will also be a strong price-shaver.

A usually strong price-depressant—weak demand—has thus far shown little effect on pyridine schedules. From time to time word gets around that a reduction (from the current manufacturers' \$1.15/lb. tag) is imminent, but nothing in that direction has come about yet.

Pyridine, extremely tight not too many months ago, is now barely moving in a soft market. Reasons for the demand flip-flop: outlets slackening (insecticides, pharmaceuticals, dyes); increased use of substituted

MARKET LETTER

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	126.2	126.3	122.4
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.9	104.8	102.5
Bituminous Coal Production (daily average, 1,000 tons)	1,525.0	1,538.0	1,508.0
Steel Ingot Production (1,000 tons)	2,137.0 (est.)	2,172.0 (act.)	2,221.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	251.0	249.3	238.9

MONTHLY INDICATORS—Trade (Million Dollars)

	MANUFACTURERS' SALES			MANUFACTURERS' INVENTORIES		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	\$25,521	\$26,514	\$21,898	\$46,165	\$45,792	\$43,107
Chemicals and allied products	1,664	1,749	1,473	3,227	3,149	3,022
Paper and allied products	803	748	667	927	955	972
Petroleum and coal products	2,222	2,252	2,003	2,887	2,858	2,728
Textile products	1,074	1,207	1,058	2,798	2,786	2,798
Leather and products	343	376	282	584	590	543

pyridines like 2-methyl-5-ethyl pyridine (MEP), vinylpyridine, in some former 2 degree material formulations.

But some coal tar and synthetic pyridine producers still hold to the optimistic view that new uses—once shelved because of the shortage—will soon take up the slack in supply.

Surplus of a different sort is bothering U.S. negotiators for Chilean copper. Dicker for the purchase (for this nation's stockpile) of the South American country's excess copper has come to a temporary halt due to the recent resignation of the Chilean cabinet.

Cropper until now has been the U.S. insistence that Chile revamp its internal fiscal and tax policies to "prevent the accumulation of another surplus." (Current backlog there is reported to be more than 100,000 tons—and still growing.) Present set-up is blamed for Chilean copper's higher-than-world-market price tag, may delay agreement to a far-in-the-future date.

On the other hand, most ammonium sulfate producers are agreeing that recent re-establishment of port price quotes for U.S. material has done little to buck lower foreign prices (CW Market Letter, Oct. 3). That's behind last week's further \$3.00/ton slash in domestic coke-oven sulfate schedules.

New port price generally being quoted—at all Gulf and Atlantic points south and including Baltimore—is \$44/ton. One major Eastern producer is also reportedly cutting his South Jersey tags to the same level, as well as slashing his Birmingham district price \$4.50/ton down to \$45.

One bright spot in the slow-moving market is trade talk that the Government may soon call for bids to supply a hefty tonnage of ammonium sulfate to the Far East, probably Korea or Formosa.

A delivered-price basis is underpinning higher tags on cellophane. On Nov. 1 American Viscose will set up two price lists—one for eight Western states, the other for the remaining states—and hike prices 2½¢/lb. and 1¢/lb. for the respective areas, to compensate for delivery costs.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending October 19, 1953

DOWN

	Changes	New Prices		Changes	New Prices
Ammonium sulfate, coke-oven, bulk, producing ovens, ton	\$3.00	\$44.00	Tin sulfate, stannous, bbls.	\$.012	\$.854
Argentine casein, acid precip., grd., 100-bg. lots, duty pd.	.0075	.2325	Carnauba wax, No. 3 crude, bags, ton lots	.07	.94

All prices per pound unless quantity is stated.



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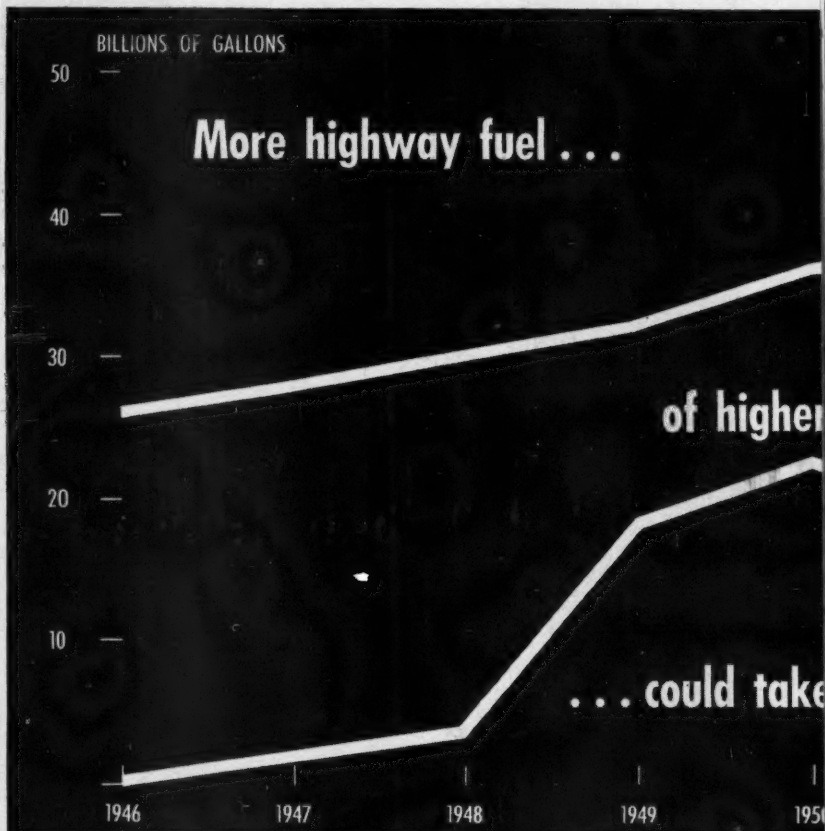
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MARKETS.



ALKYLATE DEMAND: War could redirect the flow

Alkylation at Ready

Alkylate supply temporarily loosens as the government eases up on demand for aviation gasoline.

But the omnipresent threat of war and new commercial outlets prod production, spark expansion.

Like fire insurance, surplus alkylate supply is of little value until catastrophe strikes, then it becomes an absolute necessity. Should war eventuate, this country could stand or fall on its stockpiled alkylates.

Although the polymers are momentarily bearing a "long" label—enough

so that the government has suspended for 90 days PAD Order No. 3 restricting their use to avgas—the picture is somewhat misleading. Tied to Mars' fortunes as it were, the current supply could be quickly devoured should war stimulate the military's appetite. Realizing this, the government,

Alkylate Muffles the Knock

Alkylation is one of many processes used to raise the octane rating of gasoline.

Briefly, it unites a paraffin hydrocarbon with an olefin—e.g., isobutane and ethylene to form neohexane. The alkylate (neohexane) has a higher octane rating (94) than either of the reactants; its high susceptibility to tetraethyl lead additions makes it desirable for blending with other agents to form a high-octane, anti-knock gasoline for high-compression internal-combustion engines.

Advantages of high-octane fuel are most evident and vital in aircraft: an airplane that takes eight minutes to climb 13,000 feet with 82-octane gasoline can be booted to the same height in 5.6 minutes with 100-octane fuel.

ating . . .

more alkylate

OCTANE RATING — 80

1951

1952

through its liaison with the petroleum industry, Petroleum Administration for Defense (PAD), is trying to insure not only well-stocked supply sheds, but also adequate emergency capacity. And while industry is willing to do whatever is needed, the problem isn't in sharp focus, nor can it be defined in security-revealing detail.

Many pieces of the jig-saw, however, aren't classified, do offer some hint of the over-all picture.

Rising Demand: Shortly after World War II, automobiles started rolling off assembly lines in great numbers once again. These new cars were built with more powerful, higher-compression engines, required a better-grade gasoline.* Alkylate output, seemingly headed for a drastic peacetime cut-back, was partially diverted into automotive motor fuel and thus propped against an awaited consumption slowdown.

Then the unexpected occurred; drop in gasoline demand failed to materialize. Instead, oil men were startled

* To keep pace with the higher compression ratios, octane ratings have jumped from 69.7 (1945) to 79.1 (1953) in regular-grade gasoline, from 74.9 (1945) to 82.7 (1953) in premium-grade gasoline.



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MARKETS

by a continuing rise in consumption, averaging approximately 7% annually (see chart).

Threat of the cold war's turning hot pressured military aviation gasoline purchases upward. Increasing popularity of civilian air travel likewise boosted commercial avgas buying. The Korean conflict came along next and tightened the demand vise another turn. Alkylates were taken out of the automotive market, restricted to use in aviation gasoline.

No Let-up: Early in 1952, PAD started pushing for construction of an additional 30,000 bbls./day alkylation capacity. ASPA (Armed Services Petroleum Association, the actual purchasing agency) has since contracted for 10,000 bbls. (due in by early 1955) of the looked-for 30,000, and PAD has suspended Order No. 3. But don't look for any long-range lack of interest by the government in alkylate stockpiling.

Despite the Korean truce, international relations continue close to the kindling point. And the latest word from Washington advises that PAD is still concerned with the additional, uncontracted-for 20,000 bbls. Suspension of Order No. 3, declares PAD, was due to dawdling in avgas storage construction as a result of the tight supply of plate steel. Purchases, continues PAD, merely have been put off to the last half of the 1954 fiscal year.

In its quest for additional capacity, PAD went to New York last month, contacted the Texas Co., Esso, Sinclair, Shell and Socony-Vacuum. All indicated their willingness to help, but noted that the oil industry has been steadily expanding alkylation facilities right along to meet current and foreseeable market needs. Among the leaders, for example:

- Sinclair is bringing on stream late this month or early next month two new units costing \$45 million and calculated to double its avgas output, is breaking ground at Chicago for another fractionating unit to up fuel octane rating.

- Cities Service is expanding alkylation facilities at Chicago and Lake Charles, * expects to finish by June, 1954.

- Amoco's Texas City works is doubling capacity; the firm is also designing a new East Coast unit which may have alkylation facilities.

- Phillips is nearing completion at Bartlesville of its 3,600 bbls./day alkylate expansion, doesn't have anything else planned for the present.

* Centering about the Gulf Coast area is a large segment of the nation's alkylation facilities with a total capacity in excess of 64,000 bbls./day.



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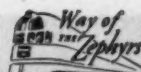
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44 STRATEGICALLY LOCATED WAREHOUSES

MARKETS

- Lion expects its new 1,150 bbls/day, \$5-million alkylation unit at El Dorado to go into operation by the end of this year.

- Shell is awaiting year-end completion of avgas capacity expansion at its Wood River (Ill.) and Houston refineries, contemplates no other alkylate additions for the present.

With this and knowledge of other expansions presumably already under its collective hat, PAD returned to Washington, where it is presently reviewing the entire alkylate set-up, figuring to make a definite move by next week. This move could be directed toward other petroleum companies, for PAD doesn't feel that the five already contacted can advantageously supply the additional 20,000 bbls/day in light of location, cost and current expansion plans.

Where Will It Go? Once this additional alkylate capacity is secured, however, industry is wondering where it will go should the government find no military need for it. PAD believes it could be absorbed by civilian consumption. Industry is dubious, points to:

- Present alkylation expansion plans to meet foreseeable needs.
- Increasing popularity of jet aircraft, which operate on cheaper kerosene fuel.
- Limited non-fuel applications of the alkylates.

In fact, the only outlet for alkylates other than gasoline blending is as a solvent. The heavier part, of no value as a fuel upgrader, is finding use as a solvent for odorless paints, while the fuel fraction can be split (though it would be economically unfeasible) into a number of different solvents. But as one alkylate expert declares, "Solvent application would be the tail that wagged the dog."

A composite estimated end-use pattern, on the other hand, points graphically to the automotive and solvents markets as the most likely blotters three years hence for any surplus alkylate, should aviation gasoline demands ease:

Alkylate End Use Pattern (est.)

	1951	1953	1956
Avgas	90%	90%	80%
Auto gas	10%	3%	10%
Solvents	0%	7%	10%

Market or no, however, the petroleum industry has expressed its willingness to go ahead with the additional 20,000 bbls/day alkylate expansion, if called upon.

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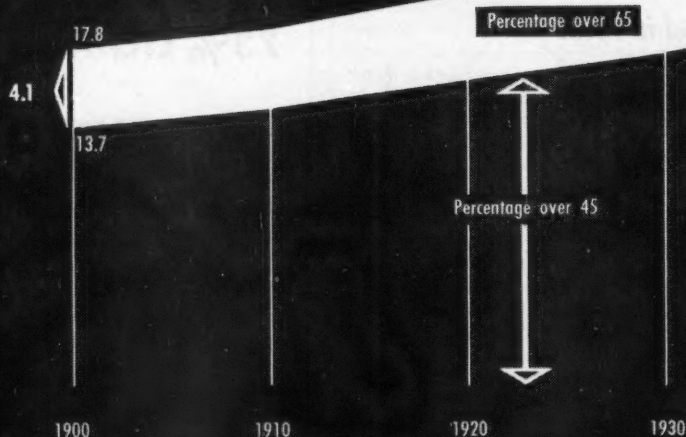
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The Journal of the American Medical Association has an article recently off the press on coronary vasodilator drugs. The effort of four doctors of the U.S. Public Health Service, Staten Island, N.Y., it stated: "For prolonged protection, pentaerythritol tetranitrate (Peritrate) appears to excel all drugs tested." While the appearance of the article pleased Peritrate's makers, Warner-Chilcott, it served mainly to point up the medical profession's growing attention to the needs of the aged.

Some authorities now figure that geriatrics will be the major items in the pharmaceutical trade within a relatively few years. That's quite a jump for a new industry.*

Forcing the focus of physicians and scientists on geriatric medicine and the biological processes of aging is the increasing number of older people in the U.S. The proportion of men and

women 65 years of age and over in our total population is 1 in 12—in 1900 it was 1 in 25. Over 13 million today, they are expected to increase to 20 million in 1980.

Challenge: At present scientists are working on the possibility of actually retarding the processes that makes human beings grow old. This slowing down, they feel, may be effected by greater consumption of vitamins and minerals as well as certain steroid hormones.

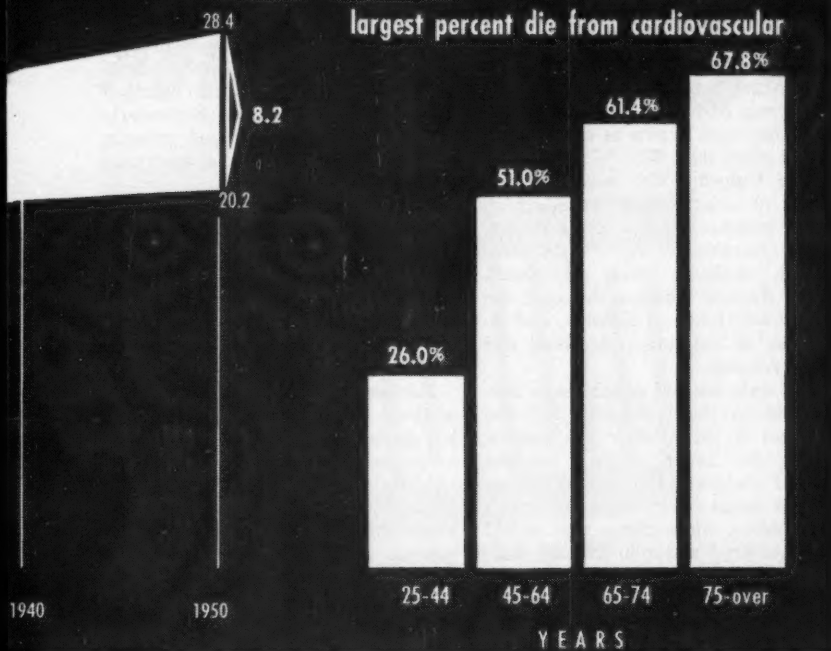
Already well publicized are the remarkable results achieved in the treatment of arthritis with the hormones, ACTH and cortisone. Others—such as the sex hormones, testosterone and estradiol—may serve an anti-aging role.

Vitamins are also promising. In a vitamin A experiment on rats it was found that an intake up to a certain level increased their life span some 10%. On another life form—fruit flies—the B complex vitamins, pyridoxin and pantothenic acid, lengthened the life span from 10 to 25%. And a combination of sodium yeast nucleate, pyridoxin and calcium pantothenate in

* Newer than fission of the atom is geriatrics. Though coined as a word over 40 years ago, geriatrics as a serious branch of medicine did not begin gaining momentum until after World War II. It deals with treatment of the elderly patient, both for diseases associated with age and other ailments which pose special problems because of the older patient's weakened condition.

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New Drugs for the Old



LEDERLE'S DUGGAR: Discoverer of Aureomycin examines mold cultures.

the same research project resulted in an increase of 46%.

*This brings up the question: What is the limit of man's life? Although more people are reaching old age today, old people are not living much longer than they did a century ago.

This suggests a present limit of 75 or 80 years for man. But closer analysis of mortality rates, as well as much experimental work, argue that the real limit is higher, that death at 80 is as much a matter of disease as death at 20 or 40.

A significant sidelight is a study conducted by a Russian physician, Ivan Basylewicz, before World War II. He examined 38 Ukrainian peasants between 90 and 99 years of age, and 34 who had passed the century mark. His outstanding observation: the absence of disease.

There is, of course, an upper limit to the human life span irrespective of freedom from disease. Gerontologists* place it at 120 to 150 years. The limit is connected in some way with

*Gerontology is concerned with the biology of the aging process, the age-induced changes in the tissues and the effects of age on the body as a physical mechanism.

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SPECIALTIES

the fact that man attains a definite size—then stops growing. Seemingly, when growth ceases, some process is set in motion that must culminate in death at a future date.

Most modern investigators are inclined to agree that in healthy persons the onset of senescence is so steady that it is seldom suspected by the person himself. Some geriatricians say senescence begins as early as 40; others place it at 50.

The Culprits: The most common killers of older persons include high blood pressure, hardening of the arteries (arteriosclerosis), thrombosis, cancer, diabetes, and pneumonia. Other diseases afflicting the aged are the various forms of arthritis, and infections of the lungs, intestinal and urinary tracts.

Not only are old people more susceptible to these diseases, but the problem of treatment is also greater.

For one thing, surgery involves greater dangers. Dosages of drugs, both in forms and potencies, is another problem. Side effects that would be considered minor in treating middle-aged patients may be prohibitive in treating over-65's.

Adding to doctors' woes is the fact that cancer and cardiovascular diseases are among the great unsolved problems of medicine.

Last year over 50% of all deaths in the 45-64 years group were caused by cardiovascular diseases; over 60% in the group above 65. (Furthermore, they account for more than one-fourth of all deaths occurring in the age group 25-44.) (See chart.)

Controls: The successful solution of cardiovascular diseases would do more to lengthen life than any other phase of the aging problem. That solution is not in sight. But research is uncovering more about the difficulties involved. Also, it has come up with products aimed at controlling certain types of the disease.

One of these, Peritrate, has already been mentioned. Its purpose: to prevent angina pectoris attacks. According to Warner-Chilcott, it is "not the answer" to angina but it is "a marked advance."

Peritrate, its makers explain, will not prevent all anginal attacks in all cases; "nor will it enable successfully treated patients to drop all restrictions, but for many it will mean greater freedom from anginal attack, greater exercise tolerance, reduced dependence on nitroglycerin."

A second Warner-Chilcott product intended for the aged is Methium (hexamethonium chloride) which is used in cases of hypertension. It is a

ganglionic blocking agent that causes blood pressure to fall by inhibiting nerve impulses that make blood vessels constrict.

Use of hexamethonium is not new. But formerly it was employed in an injectable form. Methium is in capsule form. What is impressive about Methium from a geriatric point of view is that it has been particularly successful in lowering blood pressure in patients in the advanced age range —65 to 90.

Hitherto, such patients were frequently allowed to go untreated because of the undesirable side effects of the more potent hypotensive drugs. The only objection to Methium, according to tests, is that it may cause constipation in the beginning of the treatment.

Schenley Laboratories markets two products specifically designed to combat degenerative diseases of the aged —Vascutum and Rutaminal.

Many cardiologists believe that the greatest hope in preventing arteriosclerotic heart disease lies in the nutritional control of cholesterol metabolism. That's what Vascutum strives to do.

Its development stemmed from the fact that the cholesterol content of the coronary artery is four times as great in persons who die of acute coronary artery thrombosis as in those who die from other causes. Vascutum combines a number of lipotropic factors (choline, inositol, methionine, and pyridoxine) with rutin and ascorbic acid.

Rutaminal is a combination of rutin, ascorbic acid, aminophylline and phenobarbital. It is employed as an adjunct in the treatment of angina pectoris, coronary disease and congestive heart failure. The rutin, it has been discovered, tends to restore increased capillary fragility to normal, thus minimizing the likelihood of vascular accidents (cerebral, retinal, coronary hemorrhage).

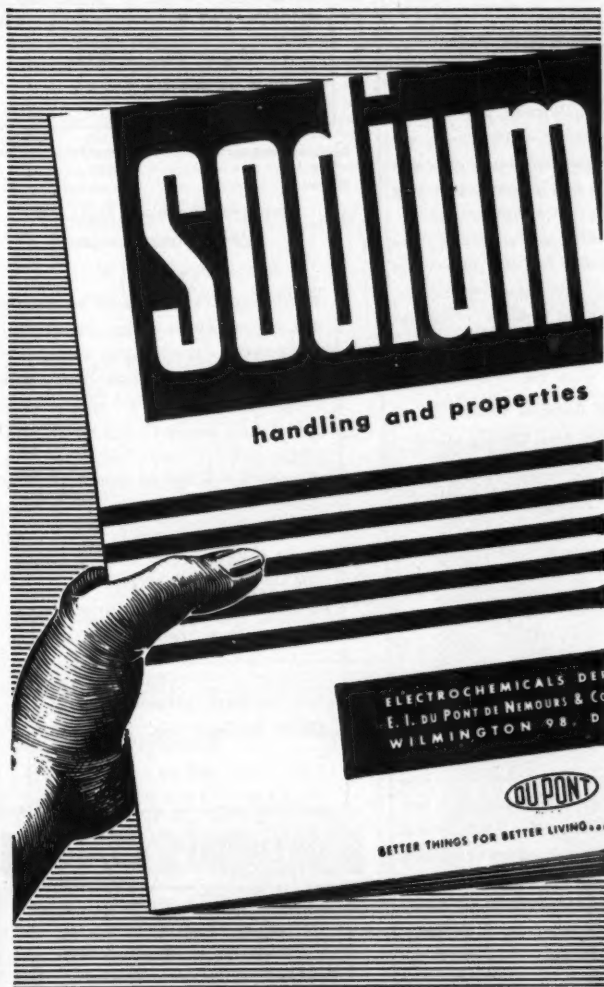
Prevention: A tremendous factor in helping people live longer and in reducing mortality in the aged was the introduction of the sulfa drugs and later the antibiotics.

Essentially the problem with the aged is that their tissues do not function as well as they did in younger years. That makes them more prone to infections. As complications of the chronic degenerative process, infections terminate the lives of countless old people.

For instance, if a person with a heart condition gets a lung infection it is likely to worsen that condition. Intestinal and kidney infections have

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a similar effect. Sufferers from diabetes are unusually susceptible to infections which cause a rapid deterioration.

The hope now is that by giving broad-spectrum antibiotics in daily doses these "intercurrent infections" can be prevented. Just this August, two physicians on the staff of the University of Tennessee College of Medicine reported on the success they were having in this field with Aureomycin.

Already helping to keep the aged infection-resistant are those possible answers to anti-aging—vitamins, minerals, and sex hormones. Because they make up for the deficiencies common in the old, they have become standbys for geriatricians.

Chemical companies making sex hormones and vitamin supplements for geriatric patients include Hoffmann-La Roche, Lederle, Pfizer, Parke-Davis, Schering, and Upjohn. There are others, and in the future there will be more.

But it's not only the chemical industry that stands to gain by more

and more sales of products intended for the aged. Healthwise, everyone should profit.

Light and Soft

Harshaw Chemical Co. last week took the wraps off its new laundry specialty, Nu Soft (CW Newsletter, Oct. 17).

Long rumored to be on the way, but only now appearing on the shelves of a few test cities, Nu Soft was beaten to the grocer's shelves by another Cleveland-made product (and as yet, available only there), Fluff-It, made by Fluff-It Corp. Both compounds are designed to give the housewife a lighter, softer wash.

As described by Leonard Armstrong who handled development and market research for Harshaw, Nu Soft is basically similar in effect to a product long sold to the textile trade as a softener. This softening is produced by use of a weakly cationic agent, claimed to neutralize the charge



ARKANSAS GAZETTE

Fish Tale: It's a Gasser

BAGFUL OF FISH, held by Gertrude Johnson in Little Rock, Ark., demonstrates a merchandising technique made possible by a Little Rock "goldfish farmer." He has come up with a capsule of chemicals that provide oxygen for goldfish packaged in water-filled plastic bags. Ordinarily, a pint or so of fresh water will keep a fish alive for four hours—addition of one of Roy Prewitt's pills keeps one wagging his tail for 17 hours.

Prewitt won't tell exact composition of his capsules, other than by saying they contain an oxygen-releasing chemical, another compound to control oxygen release, and a third to "absorb" carbon dioxide.

Pills have boosted goldfish sales in several Little Rock stores. The customer chooses his fish, which are packed in the bag of water along with one of Prewitt's capsules, then heat-sealed.

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on most synthetic fibers. In addition, there is the effect of a humectant or moistening agent, and the compound is said to act as a lubricant. Nu Soft also includes a blueing agent, although Harshaw does not sell it as such.

Armstrong worked for a number of years on the development of this additive when he was with Armour & Co., before he joined Harshaw. Currently, both Harshaw and Fluff-It are purchasing raw materials for the laundry aid from Armour.

Used at the rate of one ounce per wash load—it's added to the last rinse—Nu Soft costs about 3¢ per load (16-oz. can costs 49¢, not 40¢, as previously reported). It can also be added to the starch mixture. A fluffier wash is claimed to result—nearly wrinklefree and easily ironed.

Harshaw is test-marketing Nu Soft in Columbus, O., for a twelve-week period. This week distribution will start in Cincinnati and Dayton, and at the end of the test period, the decision will be made whether or not to sell it nationally.

Mixing More: A \$300,000 expansion to get under way soon at the York paint and varnish works of Canadian Industries Ltd. is expected to increase capacity of the plant by 20%.

Expansion will include installation of another resin mixing unit and additional enamel mixing equipment.

Sugary: Squibb is now packaging its dietetic sweetener Sweeta in a polyethylene squeeze bottle. The plastic container holds 24 cc. of the liquid, which can be dispensed in drops—two drops equal a teaspoonful of sugar.

Waxless Polish: Kildare & Berry Products, Ltd. (Winnepeg, Canada) is now widening distribution of its French Creme Polish. The Kildare product is promoted as containing no wax, no silicones. Without saying what is in its product, Kildare touts its Creme as sealing the finish indefinitely—it's "food for the manufacturer's finish." The firm also makes Metal & Mirror Polish and Cleaner, Scratch Cover and Polish, and Glass Cleaner. None contains any wax.

All-weather Lube: Standard Oil Co. of Indiana is joining Texaco and Gulf in production of new heavy-duty motor oils. Standard offers Permalube Motor Oil SAE 5W-20, which is claimed to flow more freely at low temperatures than many 5W cold-weather oils; it can be used also in warm weather. It is premium-priced, nationally distributed by this week.

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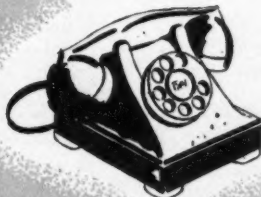
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